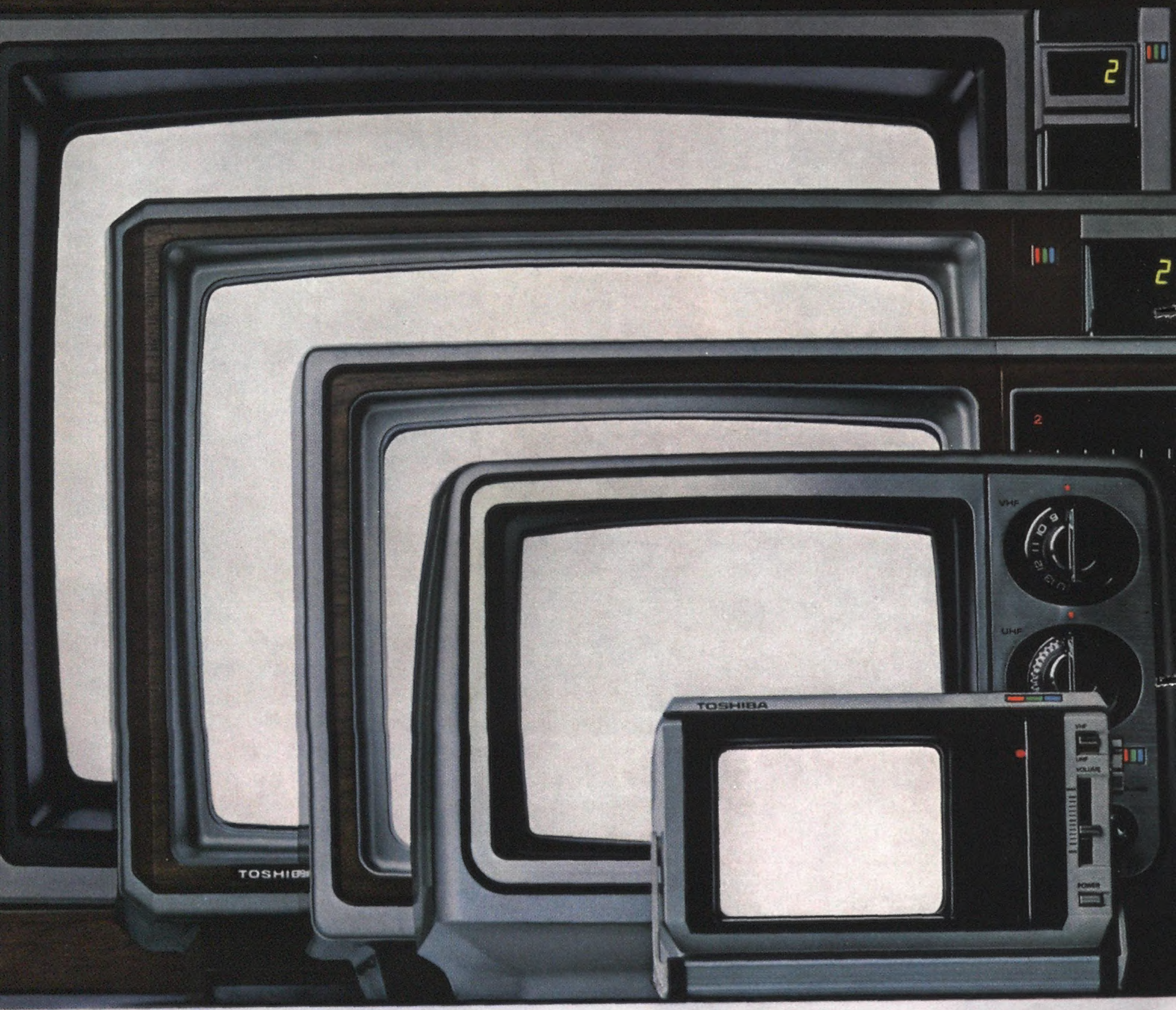
Smithsonian

June 1982

Finding new uses for kites (p. 56), Bill Watson tests innovative sea-rescue device

Toshiba America, Inc., 82 Totowa Road, Wayne, NJ 07470



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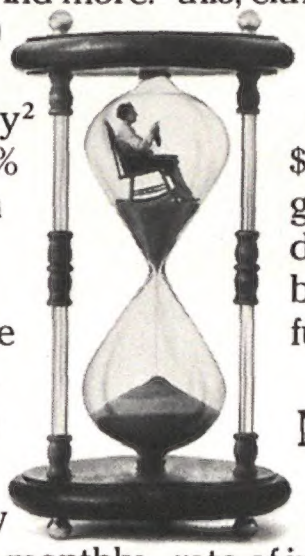

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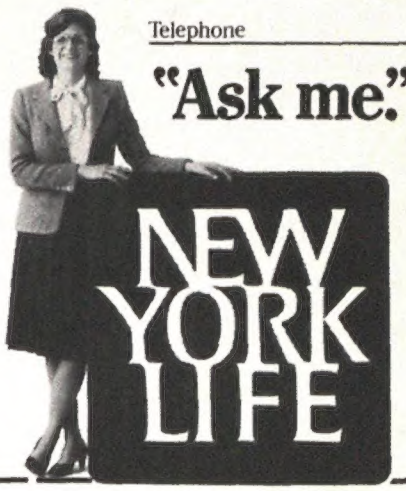

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June 1982

Smithsonian

Volume 13, Number 3

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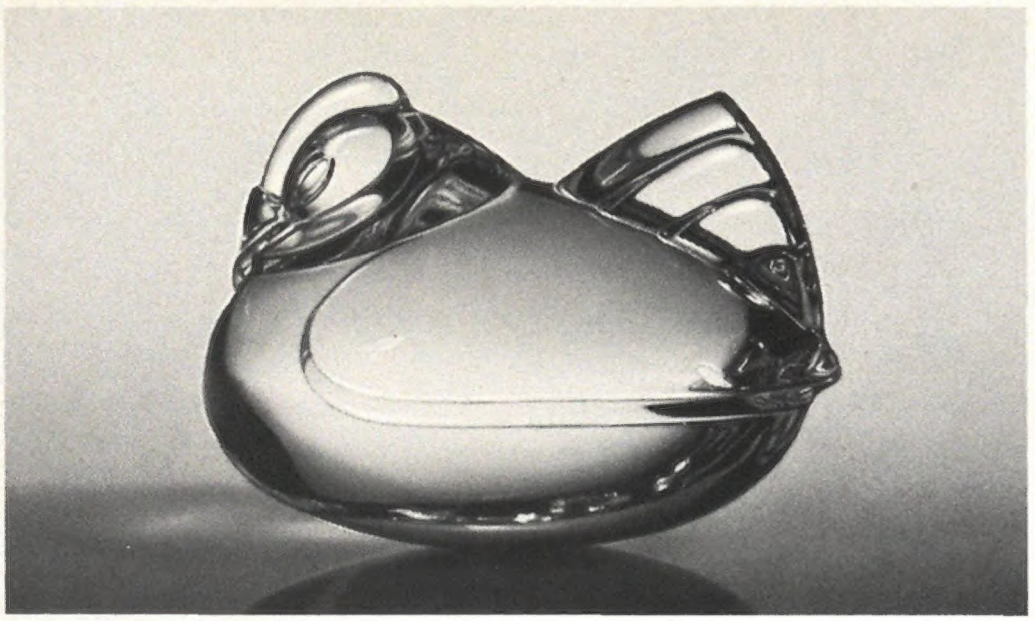

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A message from one of the nation's leading state legislators...

EVERYONE PAYS FOR ADVERSE UTILITY REGULATION

By Senator Clarence M. Mitchell, III,

Senate of Maryland and President, National Black Caucus of State Legislators

Sen. Mitchell, Majority Whip of the Maryland Senate, is in his second term as president of the National Black Caucus of State Legislators.

The National Black Caucus of State Legislators believes every American should be concerned about the financial health of the nation's electric utility industry.

The past century's economic growth, through which we attained the world's highest standard of living, was powered, literally, by electricity. Economic revitalization — indeed, economic survival — in the future is dependent upon the availability of reliable, reasonably priced electricity for our factories, businesses and homes.

To assure that availability, electric utilities must commit billions of dollars today. They must modernize existing facilities and replace inefficient, obsolete plants. They must displace high cost petroleum-based fuels, and they must build sufficient new capacity to meet tomorrow's needs.

Bills Artificially Low

State regulatory commissions are not acting in the long-term interest of consumers — or the nation as a whole — when they attempt to keep bills artificially low by sapping the financial strength and investment attractiveness of the utilities in their jurisdictions.

None of us wants to pay more than necessary for an essential service. By paying less than the fair price for the service now, we guarantee that, at best, we will pay more for electricity in the future.

A recent study by the Department of Energy projects that, if utilities are unable to make needed investments, by the mid-1990 s, electricity prices in some states will be as much as 24% higher than they would be otherwise.

Utilities Vital to Industry

The electric utility industry makes other industries possible. If our communities do not have reliable, abundant power, industries will move elsewhere, taking jobs, tax revenues and social stability with them.

To keep our electric system and our industrial base competitive, utilities will have to spend about $340 billion in the rest of this deccade. The major portion of that amount will have to come from outside investors, primarily the savings of individuals and the pools of money that comprise workers' pension funds and insurance programs.

Utilities can attract investment only if their earnings are sufficient to assure reasonable safety of the capital and returns that are competitive with investments such as government securities and money market funds.

Some state regulatory agencies, which establish the maximum amounts electric utilities can earn on the capital invested in them, have not permitted returns to keep pace with inflation or other kinds of investments. Extensive delays in rate proceedings and other adverse regulatory policies have prevented utilities from earning even the amounts authorized by the regulators.

Caucus Aware of Problem

The 337 members of NBCSL are concerned with those issues, national and local, which relate to the quality of life of the people we represent. The dilemma of public utilities and utility regulation will be the subject of public forums conducted by our Energy Committee, which will prepare a resolution for the consideration of the entire Caucus. The result is expected to be a realistic legislative policy which recognizes industry needs.

There are some signs that, at both the State and Federal level, recognition of the need to restore financial health to the electric utility industry is growing. But we still have a long way to go.

If the electric power industry falters, the nation's economy falters, diminishing our ability to compete in world markets, our employment opportunities and even our national security.

Clarence M. Mitchell, III

Clarence M. Mitchell, III

This is one of a series of messages sponsored by the Edison Electric Institute, representing the investor-owned utilities that deliver 77% of the nation's electricity.

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Secretary Ripley's comments

The view from the castle

There were Impressionists in America, too, and a SITES exhibit is giving Europeans a first eye-opening view of them as a group

The opening of a vanguard display of American Impressionist paintings organized by the Smithsonian Institution Traveling Exhibition Service (SITES), courtesy of numerous American lenders and one from overseas, has been a landmark for Paris. The exhibition at the Petit Palais, which had its debut at the end of March, will travel in due course to East Berlin, Vienna, Bucharest and Sofia.

Even for Paris, steeped in the Impressionist tradition developed there in the last three decades of the 19th century, this exhibit has been a cultural event. With the exception of Mary Cassatt—that epitome of expatriate Americans, the lady from Philadelphia who lived most of her life in Paris and arrived at a distinctive Parisian identity—none of the so-called "American Impressionists" achieved any particular réclame in the proud city. Paris, which for so long has claimed its position as the fountainhead of art and the originator of cultural expression, had tended to overlook the waves and ripples which its own Impressionist innovators had spread around the world. Perhaps it was assumed that the waves were merely producing imitators, copyists. In any case, Impressionist followers—whether American, Canadian, Australian, British or

Peabody Institute, Baltimore

Hirschl & Adler Galleries, New York

Never a total Impressionist, John Singer Sargent did *F.D. Millet House and Garden*, c. 1884.

Left: A typical portrait by Mary Cassatt, *Young Woman in Black (Mrs. Gardner Cassatt)*; 1883.

Continental—tended to be almost completely overlooked in France.

Most of the American painters, whether students of Monet or at the Académie Julian, sooner or later went home, to New England or elsewhere on the East Coast, there to meet with varied success and local fame (SMITHSONIAN, January 1982). John Gellatly, donor in 1929 of a large collection of American paintings to the Smithsonian's National Gallery of Art (as the National Museum of American Art was then called), bought his first Childe Hassam, an early one of the Paris period, for $75. John Henry Twachtman, considered by his contemporaries to be the most skilled and accomplished of the group, was largely eclipsed in subsequent years.

Many of the other artists of the period have remained little known or recognized until the past two decades. Of them all, Maurice Prendergast, representing a link with the more expressionist mode of the first quarter of the 20th century and later identified with The Eight and the Ashcan school, has recently reached a new height in his posthumous fame. His works, long recognized for their technical skill and evolving mastery of form and color, are now increasing sensationally in price. Such is the transition from genuine appreciation to the values of the marketplace.

So keenly has the public come to esteem our own American Impressionists that a whole school of collectors has arisen in the United States in the last few years, in recognition of their vivid testaments to the colors and forms of the out-of-doors of 80 years ago.

Most of our painters have been obsessed with the American landscape, and so it is particularly interesting to note the effect of the return of these foreign-trained painters to their home environment. To see the changes in palette and tonality in their work is to see that indeed the climate of the Atlantic Coast, with its effect on vegetation and rocks and soil—unlike anything in the Old World—is accurately reflected through the eyes and on the canvases of these painters. It is differences such as these which we hope will appeal to European audiences as they come to gaze at these lovely works, reflecting a splendid blend of tradition and originality.

S. Dillon Ripley

Hunter Museum of Art, Chattanooga

Childe Hassam's *French Tea Garden*, 1910, is drenched in the sunlight of Impressionism.

The Garland, 1899, is an example of Thomas Wilmer Dewing's poetic evocations of graceful women.

Private collection

Maurice Prendergast's watercolor, *Public Garden, Boston*, c. 1898, shows his mosaiclike style.

Thyssen-Bornemisza Collection, Lugano

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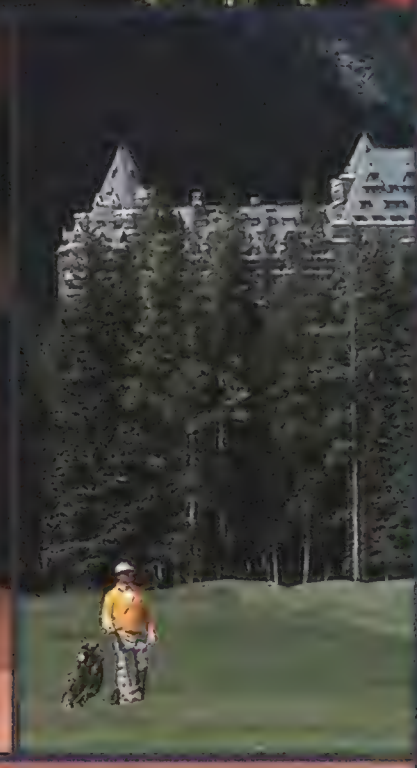

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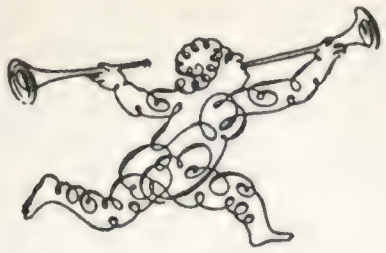

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Letters to the Editor

Guarding dogs

Dear Sir: Lorna and Raymond Coppinger's article in your April issue brought vividly to mind a year in Brussels, during my tour as U.S. Cultural Attaché, spent in the company of Chedda, an incredibly beautiful, large, white Kuvasz, a Hungarian sheep dog. When bestowed on us, Chedda [below] was a six-week-old ball of snow-white fur with big paws, black nose and oblique black eyes. As he grew he began to show all the behavior patterns of the Coppingers' guarding dogs, with one major difference: his herd was our family of two adults and three boys. Chedda would arrange himself beneath the dinner table so that each one of us was touched by either muzzle or paw. Thus he maintained complete control.

Our frequent walks over the fields near Waterloo found Chedda insistent on our moving in a compact group. Anyone who strayed caused great circling activity, designed to restore surveyable unity. Experiments in testing his tolerance of herd dispersion resulted in his desperate efforts to return the mavericks to the fold.

Alas, as he reached young manhood he began to affect adversely American-Belgian relations. Visitors found themselves fiercely attacked by an "80-pound snapping 'puppy'," and when he managed to escape out into the street to protect his home, all pedestrian traffic was forced to make a wide detour. We finally arranged for Chedda to emigrate to Austria, where he spent the best years of his life on a large estate outside Vienna.

Michael Weyl
Bethesda, Maryland

Dear Sir: The coyote, an interesting, accomplished and durable sneak thief, can be spooked off by a pair of dachshunds or the bay of a beagle.

David Binger
West Lebanon, New Hampshire

Dear Sir: Your article brings to mind the following quotation:

"When riding it is a common thing to meet a large flock of sheep guarded by one or two dogs, at the distance of some miles from any house or man. I often wondered how so firm a friendship had been established. The method of education consists in separating the puppy, while very young, from the bitch, and in accustoming it to its future companions. An ewe is held three or four times a day for the little thing to suck; and a nest of wool is made for it in the sheep-pen; at no time is it allowed to associate with other dogs, or with the children of the family. . . . From this education it has no wish to leave the flock, and just as another dog will defend its master, man, so will these, the sheep. It is amusing to observe, when approaching a flock, how the dog immediately advances barking, and the sheep all close in his rear, as if round the oldest ram . . . a whole pack of hungry wild dogs will scarcely ever (and I was told by some, never) venture to attack a flock guarded even by one of these faithful shepherds . . . the shepherd dogs rank the sheep as their fellow brethren; and the wild dogs, though knowing that the individual sheep are not dogs, but good to eat, yet partly consent to this view. . . ."

The above account, published in 1839 in Charles Darwin's *Voyages of the Adventure and Beagle*, describes shepherd dogs in Uruguay.

Maurice N. Richter, M.D.
Phoenix, Arizona

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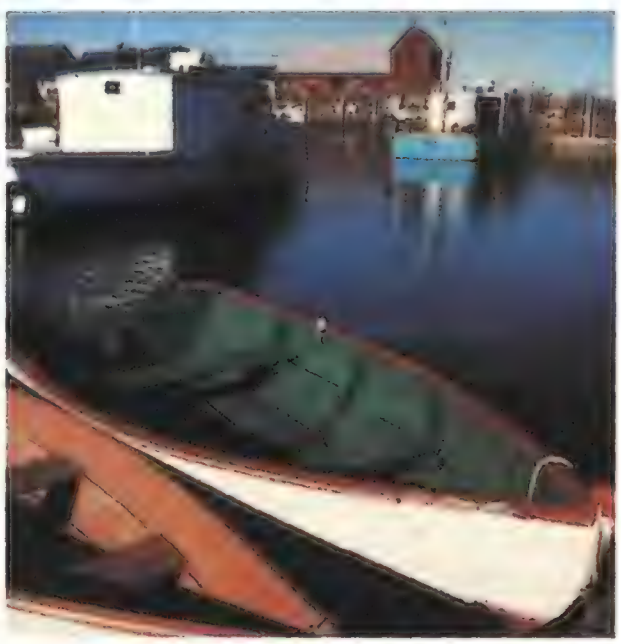

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Dear Sir: The Navajo Indians, right here in northeastern Arizona, have outstanding, home-grown guarding dogs of no specific breed, nor unusually large. They are placed with the sheep from the time they can waddle after the lambs, and are essential in protecting the flocks. They survive under great extremes of weather and temperature, from –27 degrees to 102 F. So why must one travel to Italy or Hungary to bring back charming exotics when there are sturdy, hard-working native Americans readily available?
Kim Franklin
Ganado, Arizona

Dear Sir: The Coppingers' article is both informative and provocative, but we cannot accept their theory of neotony. To biologists, neotony means retention of an ancestor's juvenile characteristics in its adult descendants.

It is true that livestock-guarding dogs, including the Komondor, have some physical traits which remind one of a juvenile canid—relatively short muzzles, dropped ears set close to the head. The Komondor's incisors, very small for the size of the animal, may look like a juvenile wolf's; they are in fact the Komondor's second, or permanent adult, incisors.

Moreover, photographs of grown Komondorok shorn of their heavy coats do not show a "heavy-set," "large-volumed" or "puppy-shaped" body. The dogs' heads resemble those of Labrador retrievers and their lithe, agile bodies remind one of a greyhound. They are large but not heavy-boned. And so morphologically, there is no evidence of neotony.

Komondorok are slow to mature compared with most breeds. Bitches come into heat late, usually between one and two years of age, and we do not feel they are truly mature until at least three. If the Coppingers' observations are based on specimens younger than three or even four years they may be describing, literally, juvenile behavior. A grown Komondor on duty is 100 pounds of adult guard defending its domain, not an "80-pound snapping 'puppy'."

Livestock-guarding dogs were selected over a long period of time for their solicitous-protective behavior toward other animals and property, behavior that appears to be locked into the genes.
Marion J. Levy jr., President
Middle Atlantic States Komondor Club
Princeton, New Jersey

Folger Shakespeare Library

Dear Sir: To be in Washington and not to enjoy an hour or two in the Folger is to miss one of our country's priceless treasures, made possible for us by the scholarship and generosity of a fellow American.
Rose E. Burckhardt
Bourbonnais, Illinois

Regional English

Dear Sir: Fred Strebeigh remembers black ice as the thick, clear pond ice of Massachusetts. That is not what we in Seattle mean by the term.

Black ice forms when the temperature plays tag with the freezing point and rain or patches of fog hit a black macadam highway, instantly turning it into a thin film of ice. It's called black ice because you can't see it until your car goes into a skid.
George R. Ewing
Seattle

Dear Sir: Perhaps Mr. Strebeigh would like to know that "scat" is an abbreviation of the phrase "Scat cat, your tail's on fire," as my East Texas mother has always said when I sneeze.
Jerome K. Barry
Irving, Texas

Dear Sir: Professor Cassidy's bettywood tree might have been the sycamore (*Platanus occidentalis*), which the pioneers knew as buttonwood. Its fine-grained wood was used for buttons because it resisted splitting. When abundant freshwater clams were found in the Ohio Valley, their shells provided better button material and the trees lost both use and nickname. Sycamores had three qualities to commend them to surveyors: they were long-lived, one of the largest trees in the virgin forest, and their skewed bark made them distinctive in all seasons.
William B. Saxbe jr.
Mechanicsburg, Ohio

Dear Sir: When I saw bettywood I couldn't help feeling it was a birch, so I looked it up. Sure enough, the genus of birch is *Betula*, which might easily have been twisted into bettywood.
Sarah Lingle
Pullman, Washington

Dear Sir: As a backwoodsman, I think I might contribute to the solution of the

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meaning of the elusive bettywood. The difficulty comes from its being confused with the initials surveyors use in establishing corner stakes of property.

When a survey is made and a corner established in forested areas, the stake position is indicated by "bearing trees." The bearing tree has a flat surface cut in it, giving distance and survey angle to the exact center of the stake. Usually two or three such trees, indicated by the letters B.T., are used to establish corners.

It seems obvious to me that if a backwoodsman speaking to a flatlander used these initials it could be misunderstood as "betty."

Francis E. Sell
Coquille, Oregon

Dear Sir: I have another one for the dictionary. When my son was a baby and had just two teeth in his lower jaw, a lady who came to admire him remarked that he had "two rockers on the front porch."

Gwynn Pealer
Ocala, Florida

Dear Sir: It is good to know there are 176 regional names for moots and woolies.

I hope now that you will put some of your scientists to work analyzing what this universal stuff is made of so that we can all combat it at the source.

Robert Newcomb
Muncie, Indiana

Napoleon

Dear Sir: In September 1968, on a visit to the Musée de l'Armée in the Hôtel des Invalides—which surrounds Napoleon's tomb in Paris—I saw a rather impressive display of items connected with Napoleon's incarceration on St. Helena. Among them were a few strands of Napoleon's hair which, a card accompanying the display explained, proved that his death was by arsenic poisoning. I had never heard this theory and found it intriguing. It was, therefore, with no surprise that I read Rudolph Chelminski's article. What was surprising was the incredulity of Jean Tulard of L'Institut Napoléon that anyone could propose such an absurdity.

Eugene F. Brown
Blacksburg, Virginia

Dear Sir: During a tour of Fontainebleau in 1962 a guide remarked, while standing before an exhibit including a lock of the

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Emperor's hair, that the hair contained traces of arsenic which clearly indicated that Napoleon was murdered.
John Allen Quintus
Canberra, Australia
French authorities insist that the poisoning theory has never been proved and that therefore they could not have espoused it in any way. Ed.

Dear Sir: In R. Austin Freeman's 1928 *As a Thief in the Night*, the greatest scientific detective in mystery fiction—Dr. John Thorndyke, physician and barrister—uses a preserved lock of hair to prove that a woman, dead ten years, was murdered by intermittent doses of arsenic. He adopts precisely the method used in Sten Forshufvud's Napoleonic research, calculating the timing of the arsenic doses based on the daily growth rate of human hair. Thorndyke also made use of a diary describing the dead woman's waxing and waning symptoms to correlate with the arsenic deposits in the hair shafts.

Thorndyke, in the 1920s, could not use neutron bombardment to confirm the presence of arsenic, and so he used chemical tests. He then reasoned "As arsenic is a fairly dense metal and the quantity of it in the deposits quite considerable, it seemed to me possible that it might increase the density of the hairs at those points sufficiently to affect the X-ray shadow." It did, and the location of the dense bands gave him the timing of the arsenic doses.

Freeman was well known for carrying out exhaustive experiments in his own lab to confirm the techniques he attributed to his fictional detective. His murderer, incidentally, avoided the obvious course of administering the arsenic in either food or drink, and ingeniously confused the evidence by causing the doses of poison to be inhaled.
Howard Brody, M.D.
Holt, Michigan

Giraffe sequel

Dear Sir: As always, I welcomed your April issue and the article on the sheep-guarding dogs was wonderful. But please, no more stories about the mother giraffe protecting her baby and losing. I know this is reality, but I don't care to see this view of it. Both my husband and I were sickened by these pictures.
Barbara Fields
Long Beach, California

Dear Sir: The photographs of the mother giraffe vainly struggling to save her baby and the painful, sad silence of the bronzed Tarahumara mother enfolding her dying child moved me to tears. Those haunting images crystallized the mystery of that fragile moment that separates life from death, and the tremendous strength of the bonds uniting all creatures in an intricate web of existence.
M. Susan Yetter
Denver

Points of origin

Dear Sir: If the distance from Marathon to Athens was 25 miles, can you tell me why the Marathon is a footrace of 26 miles 385 yards?
Elinor Krauthamer
Bronx, New York
The first Olympic footrace in Athens in 1896 and those of 1900 and 1904 were the approximate distance between Marathon and Athens—25 miles. But in London in 1908 the Prince of Wales wanted his grandchildren to see the start of the race, so it began on the royal lawn at Windsor Castle and continued through Stoke Poges and Wormwood Scrubs to the new stadium in Shepherds Bush—26 miles 385 yards. And so it remains. Ed.

Mall

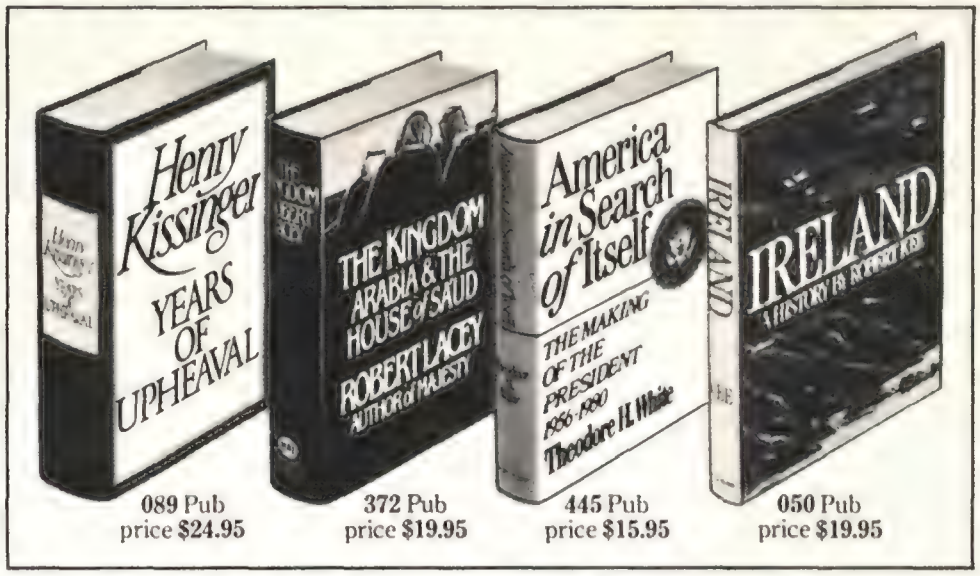
Dear Sir: It was with great joy I read your article about the square-rigged *Sea Cloud*. In 1971 The Oceanics, a school based in New York City, restored the ship to some of its past glories while at the same time offering an alternative learning experience. As a student aboard the ship, it was one of my most memorable years. The feeling of a tall ship under full sail in the open ocean is truly majestic.
Bruce Bowman
Durham, North Carolina

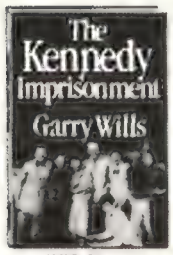
Food for thought

Dear Sir: I have forgotten what real caviar tastes like (on purpose) and thrive on the lumpfish eggs—black or red. (Our cat won't touch fish but she will eat caviar.)

But I am surprised you did not add a fourth item to your high-priced list: the delectable goose-liver pâté, foie gras, also worth its weight in gold.
Johan Franco
Virginia Beach, Virginia

If you have a special interest in history and biography, isn't this a good time to join Book-of-the-Month Club®?





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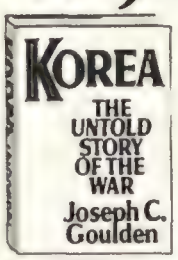

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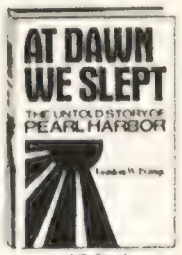

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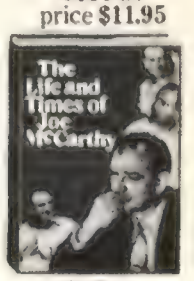

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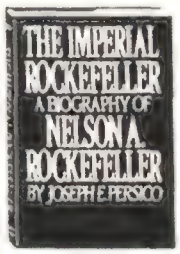

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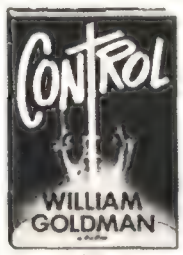

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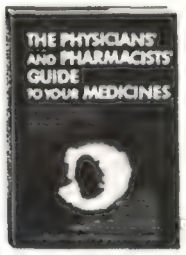

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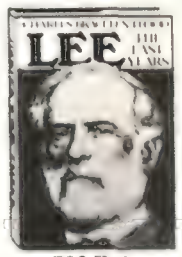

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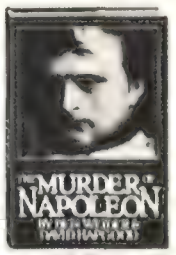

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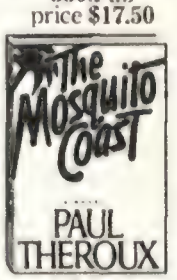

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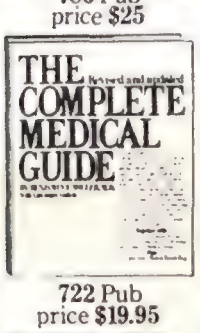

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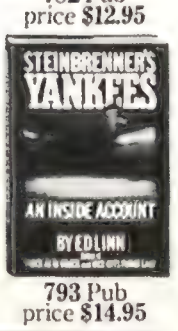

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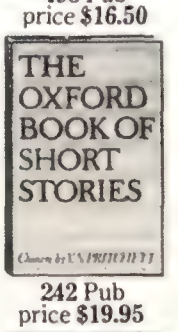

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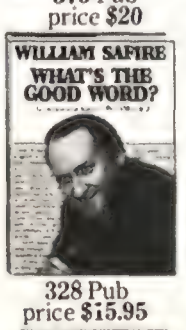

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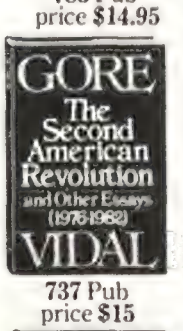

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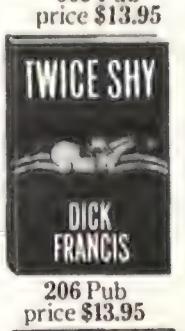

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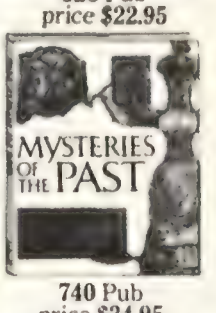

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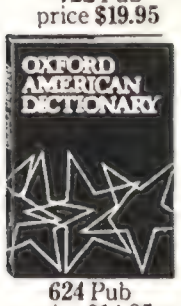

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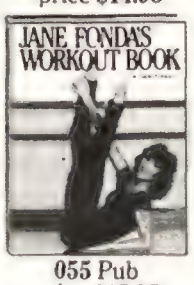

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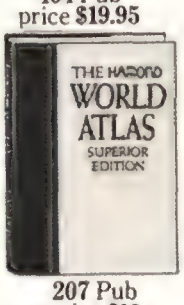

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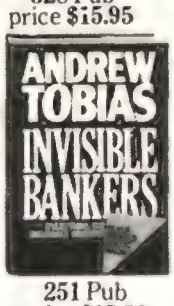

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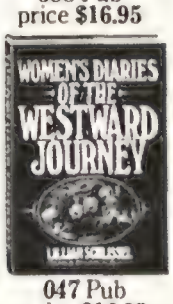

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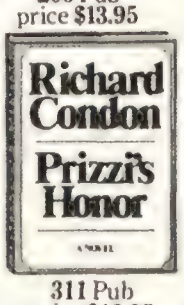

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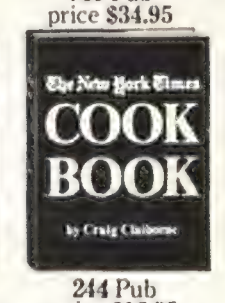

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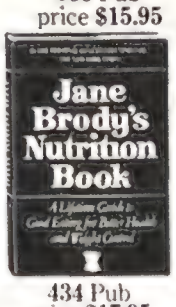

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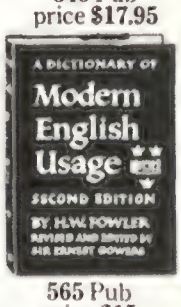

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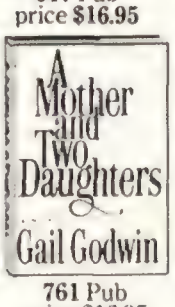

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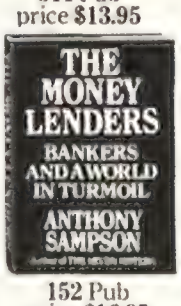

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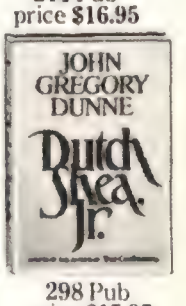

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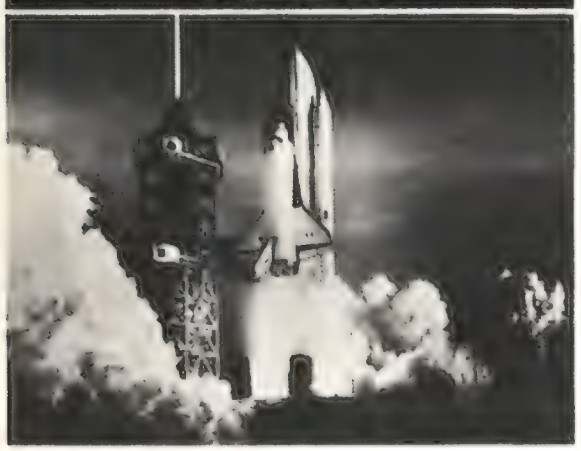

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Amelia Earhart in leather flying suit

It was 50 years ago last month that Amelia Earhart flew alone across the Atlantic. It will be 50 years in August since she soloed across this continent, nonstop. And on the 18th of this month an all-day symposium at the National Air and Space Museum will produce a free flow of memories about one of the nicest, brightest, gutsiest and best people in all aviation history.

One of the scheduled speakers that day is Fay Gillis Wells, herself pretty damn nice and bright and gutsy and good, who knew "A.E." and in 1929 helped her start the famous Ninety-Nines, the International Organization of Women Pilots. I had the luck to meet Fay Wells, who is apparently just as vigorous today as she was 53 years ago. She strode up the stairs to our offices without a wince or a wheeze, grunted knowingly at the photograph of a very bad airplane on the wall, grinned generously at some trivial witticism, and talked warmly about the days of helmet-and-goggle flying and Amelia.

Fay Wells met A.E. when the latter came to Roosevelt Field (now a rather old housing development, I believe) on Long Island to hold the first meeting of women pilots. "She was always a feminist," Fay said, "always promoting the idea that women were just as capable as men."

The name of the organization was A.E.'s own idea. "She thought 'Powder Puffs' was a lot of baloney and 'Association of This-and-That' was stuffy. There were 99 of us women pilots, the charter members. So Amelia said 'Let's call ourselves the Ninety-Nines,' and we all liked that."

Fay learned to fly at Valley Stream, Long Island, in August 1929—about a year after Earhart had flown the Atlantic as a somewhat embarrassed passenger, fed up at having been included in the adventure just because she was female, grumbling afterward that she might as well have been a sack of potatoes. Fay pointed out that her determination to cross the Atlantic solo was born in that rather humiliating 1928 flight.

Like Fay and most of the other women pilots in those days, Amelia was only a weekend flier, scrimping and plotting to buy time in the air. But she was a natural leader, a strong presence who left no

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doubts about her personal sense of direction. "She was a really beautiful person, quiet, witty, concerned about the needs of others. She had the most gorgeous, expressive hands." Born in Atchison, Kansas, she went to Columbia as a pre-med student, taught English to immigrants in Boston. She had been caught up in the swirling interest in aviation long before Lindbergh's flight. Yet she shriveled at the excesses of the press, the "hyping" as we might call it. "She hated being called 'Lady Lindy,'" Fay recalled.

The name and the adulation were inevitable, however, as Earhart pulled off her transatlantic flight in her bright red Lockheed Vega, now on display at the Air and Space Museum. She had prepared for the flight in secret and took off without fanfare, but from then on she was the nation's reluctant darling. It was in 1937 that she vanished during her attempted round-the-world flight. Her disappearance will be discussed at the symposium.

Fay Wells admits to being in the record books herself. She was the first woman to become a member of the Caterpillar Club, the exclusive society of pilots who have parachuted from their planes in order to save their necks. Her induction occurred on the day after her first solo in the fall of 1929. Her instructor was asked to perform some acrobatics in a Curtiss Fledgling to show it off as a potential trainer. He asked his student if she'd like to come along for the ride.

Fay never said No to anything connected with airplanes. She strapped herself in and they took off. But when they went into the first loop they noticed a tail flutter. Then, while the plane was inverted, the upper wing broke loose and in Fay's words, "The engine fell out and so did we."

She groped for her parachute rip cord, found the D-ring and tugged—never mind counting to ten, which was the rule of thumb in those days. People on the ground saw her chute open, but that was all. Everyone thought it must be the instructor who had done everything right, and that poor Fay, the student, must have "bought the farm."

Not so. The instructor had no sooner bailed out than he was hit on the head by a piece of falling engine. By the time he came to, he was very close to the ground, falling free. He yanked his rip cord, and his chute streamed out, too low to be seen by the onlookers. It never properly

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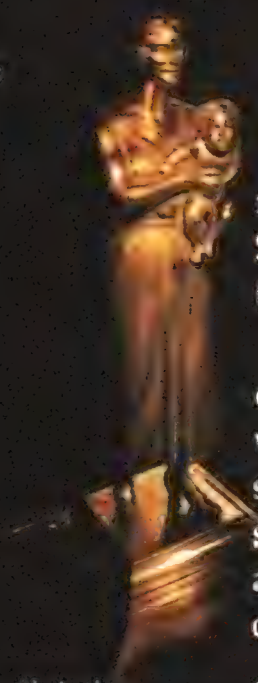

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opened, but as he crashed through the branches of a tree, it snagged on the upper limbs and caught him, breathtakingly, as he swooshed toward the ground. And so, a few feet from instant death, he joined the Caterpillar Club, too.

That same day produced a third inductee to the Caterpillar Club and so set another record of sorts. A former wartime pilot hit the silk over Cleveland. Fellow by the name of Jimmy Doolittle.

Amelia Earhart's career may seem like old news, but half a century is nothing compared to the age of the big giraffe over in the Museum of Natural History. It suffered the great honor of being shot by Theodore Roosevelt during his 1909 expedition to Africa.

The old giraffe has suffered since, too. Over the years its skin has cracked and faded and lost some hair. And I learned all about the animal when I stopped to talk to Frank Greenwell, museum specialist in the Department of Vertebrate Zoology and, in his own words, "a sort of resident taxidermist."

Frank was mending large cracks in the skin with water-soluble glue. But, he explained, there are many places in an old specimen like this where the skin is so thin and rotten that it is in danger of disintegrating. So he uses adhesive strips—Band-Aids, in effect—to hold the skin together until the glue is dry. Where gaps are too wide to be glued together, Frank applies wax as a filler—a mixture of beeswax, balsam and paraffin with oil colors.

New hair is faked by scoring the wax with fine needles. Bullet holes are closed with wax or a filler of tow, a form of sisal. A shiny nose, caused by generations of schoolchildren who have found it irresistible to the touch, must be fixed. Giraffe noses are too lofty to reach, but a nearby impala needed a fast makeup job. Frank says the inevitable dust must be vacuumed away very carefully and tougher dirt picked up with a petroleum distillate. Dark colors fade first from the animal hide. You can see this clearly on old mounted zebras where the black stripes have become brown or even tan. The color is restored by using hair dye.

The lion group in this World of Mammals hall has faded over the years and needs dye. This group, a male, two females and two cubs, was also gathered for the Institution by the thundering rifle of ex-President Roosevelt during the 1909 Smithsonian Scientific African Expedition. The animals came from East Africa and were mounted by George B. Turner of the Smithsonian, a hallowed name in taxidermy.

I became intrigued by just what T.R. *did* shoot on this safari, for I had seen an old cartoon of the day which depicted the Smithsonian castle almost buried under cases of specimens, all from that expedition. I did a quick survey of the hall and, not counting "Large Birds of the African Marshes" collected by the good Colonel, I noted three zebras from Kenya, three rhinos from the Sudan, five adult and two infant hartebeests from Kenya and of course the lions and giraffe. A fair haul.

The springtime visit of the Dutch, which was mentioned last month, was a brilliant success as attested by blazing fireworks on the last evening of Queen Beatrix's and Prince Claus' sojourn in Washington. I saw them arrive at the Hirshhorn for a look at the "De Stijl" exhibition, and can only report that she is a most attractive lady and rated three mounted Park Policemen in her security escort.

The Queen and her consort (who looks something like Joel McCrea—remember him?) also went to the National Gallery to open the Mauritshuis art show (p. 46) and give a dinner there. They also did unimportant, non-Smithsonian things like attending a White House dinner and a joint meeting of Congress.

Edwards Park

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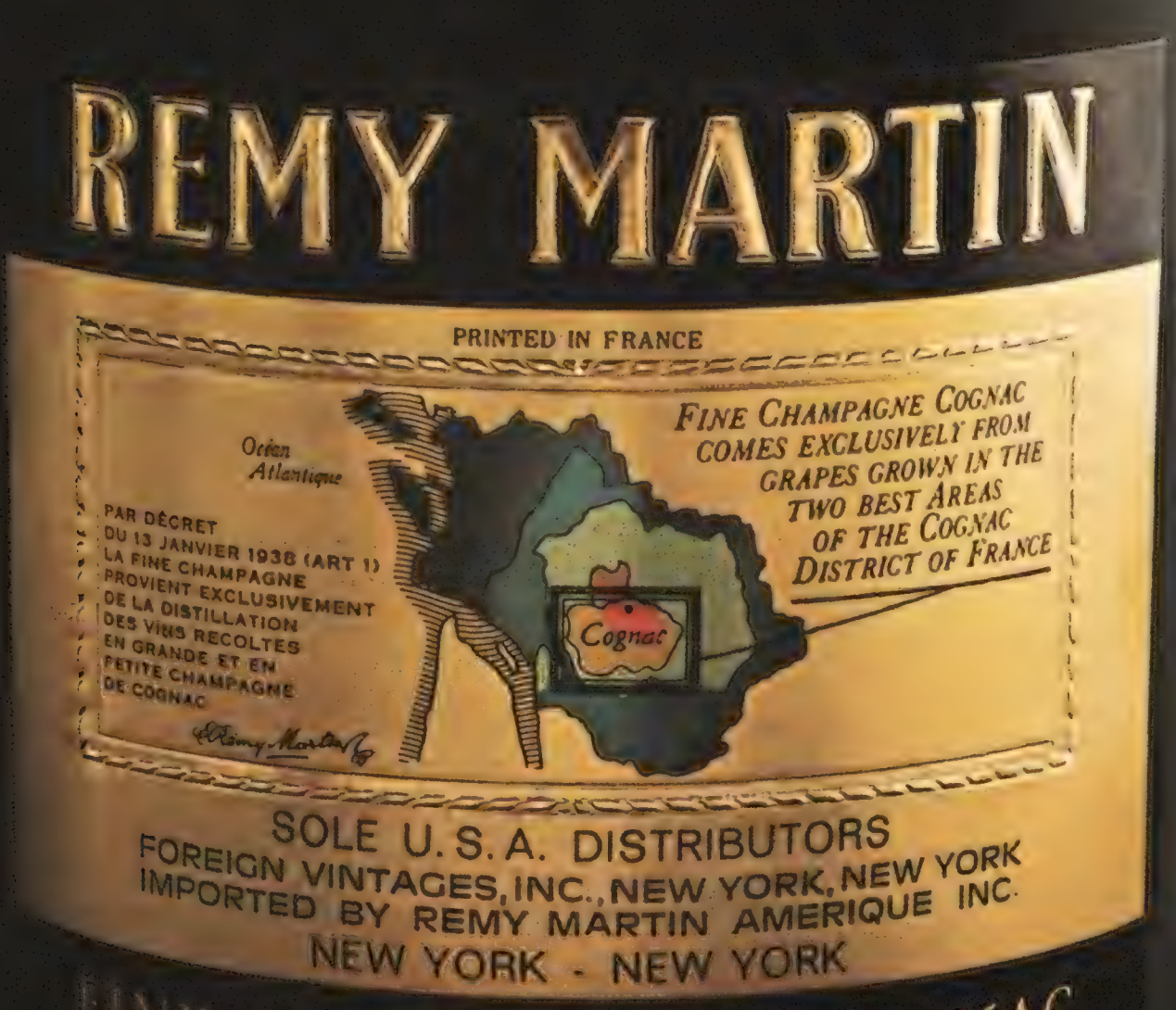
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Phenomena, comment and notes

Barbara Ward speaks at a United Nations conference on human settlements, 1976.

Ten years after Stockholm, attitudes may have changed—but 'we ain't farmin' half as good as we know how'

Back in 1962 Rachel Carson published *Silent Spring*, causing a furor and forever changing the way we use pesticides in the United States. In 1972 Barbara Ward (with René Dubos) published *Only One Earth*, a source for the global Earth Day that was the Stockholm conference on the environment. Inside the hall, governments adopted 26 principles and 109 recommendations for action, while outside unofficial groups paraded Japanese victims of mercury poisoning and a whale balloon through the streets. Ten years later the results of that effort are much less clear, but attitudes have changed fundamentally and the eventual solution seems clear—if staggering.

Assessments of the ten years since Stockholm are coming from its own progeny, the United Nations Environment Programme (UNEP), based in Nairobi, and Barbara Ward's own International Institute for Environment and Development (IIED) in London. Only now am I beginning to appreciate the juxtaposition of concerns in that organization's name. Barbara Ward died last year, but her ideas remain very much alive.

The good news is that our hopes for the environment and Third World development have begun to converge. Goals that ten years ago seemed mutually exclusive now appear to be two sides of a single coin. It is a relief ("What am I doing worrying about birds when people are starving?") and a pleasure to understand.

The idea is obvious. We are not going to save the environment, what we think of as the natural world, while hundreds of millions of people scratch desperately for enough food and fuel to get through one more day. Erik Eckholm, in *Down To Earth*, the book Barbara Ward was to have written about the decade since Stockholm, puts the matter clearly:

". . . The absolute poor have no time to worry about global environmental trends. Yet in many ways they are more deeply affected by environmental quality than are the affluent. Most of the rural poor live directly off the soils, forests, waters and wildlife whose deterioration has become the object of so much international concern. Many are forced by circumstances beyond their control to destroy the very resources from which they must scrape their living."

Ten years ago "environmentalists" were concerned with stopping pollution and conserving resources. Conservationists concentrated on protecting endangered animals, establishing parks and preserves. "But," Eckholm writes, "an animal cannot be saved apart from its habitat, and natural areas cannot last as fortress islands in seas of hungry people."

It goes without saying that people come first. The Stockholm proclamation included the words of Tang Ke, leader of the Chinese delegation: "We hold that of all things in the world, people are the

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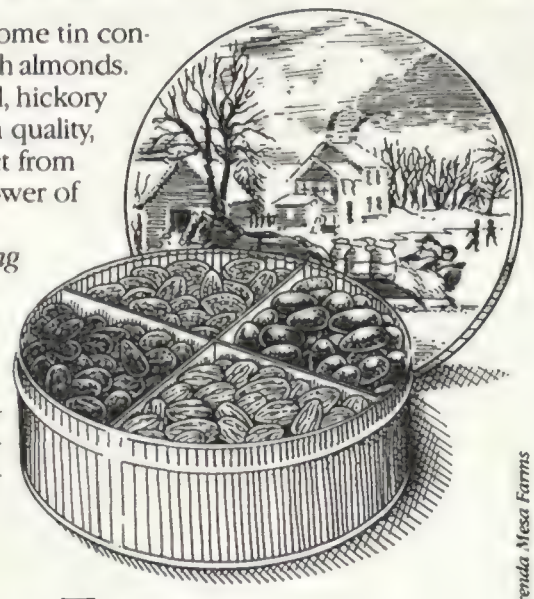

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most precious." Or as Eckholm spells it out, "For reasons both practical and moral, those working to safeguard the environment must also work for a more just social order."

Two years after Stockholm, Barbara Ward chaired a symposium in Cocoyoc, Mexico, on just this connection. By 1980 these ideas were fully incorporated in the World Conservation Strategy of the International Union for Conservation of Nature and Natural Resources and the World Wildlife Fund. The Strategy warns: "The combined destructive impacts of a poor majority struggling to stay alive and an affluent minority consuming most of the world's resources are undermining the very means by which all people can survive and flourish."

The key idea is sustainability. We not only must have development in the Third World, but we also need the right kind. Earthscan, the information arm of the IIED, puts the argument this way: "Unless development is environmentally sound, it will not be sustainable. Development that is not sustainable destroys both the environment and the resource base on which any development ultimately depends. Non-sustainable development is now increasingly seen as a sham by both bankers and environmentalists."

In many countries it is agricultural and rural development that is needed most. The poor there have seen little or no trickle-down from new airports and industries; some costly aid projects, such as dams, have proved to be disasters. Some planners, according to Earthscan, now believe that "real" development cannot be achieved by simply copying the West, where industrial growth has been based on "exploitation" of the environment and is therefore not sustainable.

None of which is to say the rich countries should end international aid. Barbara Ward was clearly distressed by what she saw as the "North's collective meanness in the early 1980s." She wondered whether we were seeing the real consequences of Vietnam—"a profound disillusionment with any kind of cooperative international action, and a falling back upon a crude, cynical nationalism."

The conservation movement has also turned to the idea of sustainability. People now explicitly come first. The World Conservation Strategy, Eckholm suggests, "goes far beyond the usual con-

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servation manifesto: its declared goals are to maintain essential ecological processes and life-support systems, to preserve genetic diversity, and 'to ensure the sustainable utilization of species and ecosystems, which support millions of rural communities as well as major industries.'"

Sustainability is, so far, a theory yet to be put into practice on any major scale. But there is no lack of specific places to start. The 48th paper of the Worldwatch Institute in Washington, just out in March, is called "Six Steps to a Sustainable Society." Written by Institute director Lester R. Brown and researcher Pamela Shaw, the report is a distillation of the action recommendations in Brown's 1981 book, *Building a Sustainable Society*. They contend we are destroying the basic biological systems on which everything depends—the forests, grasslands, fisheries and croplands—and that if we don't change our ways society will collapse.

Most important in their view is to stabilize the world population at a much lower level than that projected by the U.N., 10.5 billion in a century or more. After that, surprisingly, the most useful work may be to plant trees. The forests of the world shrink by an area the size of Hungary every year; not only is the supply of wood dropping in the face of rising demand, but water tables are falling and soil is washing away. The other recommendations concern slowing the loss of topsoil from farmland (SMITHSONIAN, March 1981), recycling, energy conservation and alternative sources of energy. A familiar list, but offered with a new sense of urgency.

Brown and Shaw look forward to it all. They conclude: "Taking part in the creation of a sustainable society will be an extraordinarily challenging and satisfying experience, enriched by a sense of excitement that our immediate forebears who built fossil-fuel-based societies did not have. The excitement comes from both the vast scale of the undertaking and the full knowledge of the consequences of failure."

Barbara Ward was not optimistic before her death last year. In a foreword to *Down to Earth*, the book she had originally planned to write herself, she conceded that the Stockholm Conference "should perhaps have been more of a turning point than it became."

A little later, she added: "For while the idea of a global interdependence was developing in the 1970s, so too was a reaction against this trend. The last few years have seen a rising resentment of the notion that we are all dependent on other people and other nations. This resentment is independent of ideology. . . .

"We should not be surprised at this revision toward a narrower nationalism. Big powers never want to be dictated to by little ones. And when it comes to governance of the global commons—the seas, the atmosphere, the forests, rivers, and rainfall that sustain human life—local pressures often tend to be stronger than any emerging international constituency. That, I fear, is the reality today."

And yet she ended on a hopeful note. After a decade of follow-up conferences, she noted, the United Nations is moving from general understandings to a specific problem. I had not realized that the U.N. has declared the 1980s to be the "International Drinking Water Supply and Sanitation Decade." A title to glaze the eyes, but Ward saw it as a "tremendous step forward" in sanitation, waterborne-disease prevention, primary health care and infant mortality—and a resultant slowing of population growth, because when fewer infants and children die, parents tend to have fewer children.

We know what to do, Ward believed, and we—humanity—may be the only problem that cannot be solved. She ended her 1979 book, *Progress for a Small Planet*, on this point: ". . . the only fundamentally unsolved problem in this unsteady interregnum between imperial ages which may be dying and a planetary society which struggles to be born is whether the rich and fortunate are imaginative enough and the resentful and underprivileged poor patient enough to begin to establish a true foundation of better sharing, fuller cooperation, and joint planetary work. . . . Can [humanity's] inescapable physical interdependence—the chief new insight of our century—induce that vision [of joint survival]? We do not know. We have the duty to hope."

Rachel Carson is gone, and now Barbara Ward is gone. I don't know of any book in 1982 that will pick up this series. Perhaps we don't need one. As the farmer said to his son, just home from college and bursting with ideas, "We ain't farmin' half as good as we know how right now."

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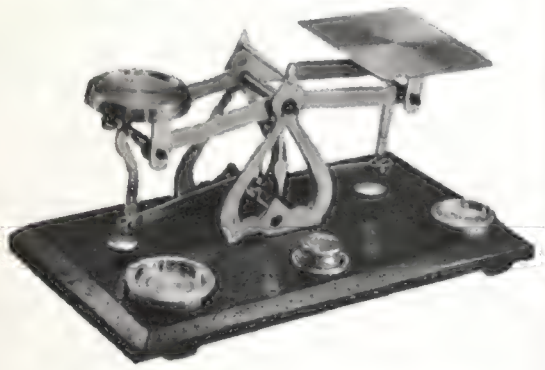

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By Roger Warner

City of Bangkok, all aglow to acclaim its King and 200 years of freedom

His ancestors launched royal barges and clever diplomacy to juggle East and West; King Bhumibol continues the tradition—and more

A convoy churns along dusty roads in Thailand and comes to a halt. From a jeep near the front, a trim middle-aged man emerges wearing jungle boots and a suit jacket and holding a topographical map. Soldiers and officials salute him. Frowning, he asks them about something he noticed on the way: a bridge being built based on what he thinks is a poor design. Drawing on his engineering background and pointing to his map, he grills the officials until he learns who is responsible, and receives pledges that the matter will be corrected. Then this man, who is the King of Thailand (right), walks toward the villagers—they have cropped hair and betel-stained teeth—and his expression changes to a quiet happiness lighted from within.

Nearby, the Queen kneels on the ground with her ladies-in-waiting. Though she is known for her exquisite silk gowns, today she wears loose, comfortable clothes with a broad-brimmed sun hat and sneakers (p. 41). Villagers offer gifts of forest orchids and hand-woven cloth, which she accepts; she talks to them about their rice crops and their health. Those who need medical treatment get it from the entourage's doctors; the seriously ill will be taken to hospitals at royal expense. Meanwhile the King has his map out again and is talking to a village headman about building a small dam. The King wants to improve crop yields by bringing in irrigation water and slowly persuades the headman that the idea is a good one.

King Bhumibol talks with villagers during a routine visit to a rural area; with him goes a medical unit.

Buddha image is borne along Chao Phraya in royal barge, one of many in bicentennial procession.

Workmen polish golden stupa at the Bangkok palace in preparation for the anniversary festivities.

Though it is a hot day, the King is unhurried. He talks with his subjects long after his aides begin to wilt. When he has finished at one village he drives on to the next, and the next. And that day a small impoverished section of Thailand grows closer to the central government and to the man who is its exemplar. Back home, late at night, he continues his activity, jotting notes and making plans in his private study, while his teletypewriter chatters and his radios —tuned to different frequencies—bark reports from all over his Southeast Asian nation.

His name is Bhumibol Adulyadej. He is the ninth king of the Chakkri dynasty; to give him his dynastic niche he is sometimes called King Rama IX. Though he is a constitutional monarch with limited powers, he is widely credited with keeping his country unified in times of trouble, just as his absolutist forebears did.

This year sees the celebration of the 200th anniversary of the founding of the dynasty and of the capital city that foreigners call Bangkok, but that many Thais call Krung Thep. And, given that several of Thailand's neighbors have lost their monarchies and settled into communism and socialism or have maintained royalty that on the whole is uninvolved with development, the bicentennial is, for Thais, a time for the counting of blessings.

In a way, Thailand has always viewed itself in context with its neighbors. The name Thailand is a sort of defensive boast; it means "land of the free." Though the people seem genially disorganized to outsiders (and to insiders, for that matter), they have a stubborn streak. They are proud of being the only people in the region never colonized by Western powers. Except for brief periods, they also remained free of Asian conquerors. With its first king crowned in A.D. 1238, Thailand, or Siam, as it historically was called, has a much longer history than that other land of the free—America. But the two bicentennials fall so closely together that it is tempting to compare their evolutions.

Ayudhya falls, a new capital rises

In 1767, just as the American Independence movement was heating up, Siam suffered the worst setback in its long existence. The capital and seat of culture at Ayudhya, inland on the Chao Phraya river, was ransacked by the neighboring Burmese. Buildings were leveled. Precious records and art were destroyed, except for a few religious objects disguised to conceal their value—for example, the five-ton solid-gold Buddha that had been covered with stucco and which now rests at Wat Trimitr in Bangkok (pp. 42-43). Members of the royal family, officials and most of the inhabitants were killed or taken to Burma in captivity. But a Siamese general named Phaya Takh Sin man-

Anna Leonowens, English governess at Siamese court, wrote accounts that led to *The King* [right] *and I*.

Mongkut, King Rama IV, was a former monk. As an enlightened ruler, he opened doors to the West.

aged to escape. In the following months, he succeeded in driving the Burmese out, and established a new capital farther down the river near the Gulf of Siam. But he went insane, and in 1782 his favorite general, who had been given the name Chakkri, succeeded him.

In this case, there *was* something in a name. The *chakra* was a sharp-edged discus held in one of the four hands of the Hindu god Vishnu. For a Buddhist general in a Buddhist country to use this name was something of an Oriental conceit: it showed the same kind of allegorical pompousness displayed by portraitists who painted George Washington in a Roman toga. This first Chakkri king, who later became known as Rama I, had the same massive common sense and instinct for leadership that Washington had. And, like Washington, he succeeded in unifying his country and setting it on a course toward prosperity. But the two nations traveled in different directions.

While America was struggling to create its own unique form of democracy (the Constitution was not signed until 1787, five years after the founding of Bangkok), the early Chakkri kings of Siam were deliberately old-fashioned. True conservatives, they did their best to establish another Ayudhya. Rama I moved the capital of his predecessor across the river to the small trading station of Bangkok, whose name meant "village of the wild plum."

The new city, which he called Krung Thep, was surrounded by water and designed with the moats and canals that had been the distinctive feature of Ayudhya. Rama I built a mile-square palace with high, white crenellated walls in Ayudhya style. Finally, to proclaim his royal presence and to give his people the show he felt they deserved, he rode around the waterways in a long, narrow, opulent barge with an elaborately carved animal head at the bow, and powered by a scarlet-uniformed crew manning gilded paddles. In later reigns, the barges were rarely used. The canals deteriorated or, with the arrival of cars, were covered by roads. But the palace of Krung Thep is still on its original site, and a flotilla of resurrected royal barges was featured in the anniversary celebrations (p. 34).

Siam was a riverine country. The people grew rice and got about by boat, although elephants were used on land for heavy labor and war. It was a relatively prosperous corner of Asia with its own language and traditions. Kings Rama I and II kept it isolated, sending only a token tribute to imperial China far to the north in order to carry on a modest China trade.

Rama III, however, took a little jog off the conserva-

Roger Warner is a free-lance writer who is based in Southeast Asia. He wrote on the life-style of tramps in the December 1975 SMITHSONIAN.

Chulalongkorn, King Rama V (right), lines up with a few of his sons who were at school in England, 1897.

tive course set by his forebears. For the first time, he signed limited trading treaties with England, which had established footholds elsewhere in the region, and also with the United States, whose intrepid Yankee merchants were voyaging far beyond their young nation's expanding borders. The envoy who brought that treaty in 1833, one Edmund Roberts, was recorded as "Emin Rabad, a nobleman from America" in the Siamese court chronicles.

At about the same time came the significant arrival of the first permanent American missionaries. Though they had difficulty persuading the easygoing Siamese of the seriousness of original sin, and counted their household servants (Chinese rather than Thai, at that) among their tiny congregations, they made their mark. They introduced the first Thai-alphabet printing press, and they tutored and stimulated with their conversation a remarkable prince, who was at the time a Buddhist monk. His name was Mongkut.

Mongkut, a brilliant scholar, led a movement to reform Buddhism. Barefoot, in his monk's robes, he had walked all about the country, becoming acquainted with ordinary people and their problems (as his great-grandson Bhumibol was to do by jeep and helicopter more than a century later). With missionaries' help, Mongkut learned Latin and a quaint but erudite English. He was passionately interested in science, and once predicted accurately a total eclipse of the sun. When, in 1851, he shed the monk's robes to become Rama IV at age 47, he was fully trained to undertake a mission that nobody else in his kingdom had realized was necessary, and which nobody but he

Chulalongkorn's daughters mixed Thai and Western fashions; their father did the same with politics.

was competent to do. He was to take the doors that had barely cracked open in isolationist Siam and throw them wide apart.

Mongkut started a process of Westernization that is still going on. His liberal trade treaties began to change the economy from self-sufficiency to one that produced surpluses, exported in exchange for Western merchandise. He signed treaties with both the French, who were beginning to move into Indochina to the north and east, and with the British, who were making further inroads to the west and south. He started a tradition in Thai diplomacy: to bend like bamboo and yield gracefully to irresistible force, but at all other times to play the outside powers one against another. To give himself flexibility, he signed treaties with many countries, including America.

After his astute dealings with "Emin Rabad's" successor, Mongkut was sent a gift of books, apparently including former Secretary of War Jefferson Davis' classic treatise on the use of camels on the American frontier. In response, Mongkut wrote President Buchanan suggesting that Siam send several pairs of young elephants to America where, as he put it, they could be let loose to "increase and multiply" and later be tamed for use. Abraham Lincoln, who had become President by the time the letter was received, replied courteously that "our political jurisdiction does not reach a latitude so low as to favor the multiplication of the elephant." Lincoln added that steam power already had proved itself satisfactory for land and marine transportation.

Meddlesome Anna at Mongkut's court

Mongkut's correspondence was lively and wide-ranging. It was his practice at first to summon missionaries late at night and have them brought by boat to the palace to instruct him in the finer points of the English language. According to the teacher who later had this job, he would "inquire if it would not be more elegant to write *murky* instead of *obscure*, or *gloomily dark* rather than *not clearly apparent*."

The new teacher was a strong-willed English widow named Anna Leonowens (p. 37), a Victorian-style writer and highly principled egalitarian who was, however, unhappy in her personal life. Commuting to the palace with her young son, she spent as much time interceding in quarrels among court residents—to the annoyance of officials, who found her meddlesome—as she did in her regular work, helping Mongkut with his letters and tutoring the royal children.

About her employer, "the disk of light and life" around which "swarmed" these strange "flies"—as she called the palace consorts—Mrs. Leonowens formed a divided opinion. On the one hand, she found him

At his tonsure ceremony in 1905 is Prince Mahidol, son of Chulalongkorn and father of present king.

"liberal and beneficent," and "more systematically educated, and a more capacious devourer of books and news than perhaps any man of equal rank in our day," and on the other hand, "envious, revengeful, subtle . . . as fickle and petulant as he was supicious and cruel." Mongkut, for his part, found her exasperating. "You are one great difficulty," she quoted him as saying. "You are not wise. Wherefore are you so difficult? You are only a woman. . . ."

After five years, when she left his service and returned to England, she wrote books based on her experiences in Siam but embellished with events she made up or plagiarized. The eventual descendant of the Leonowens books, in the next century in America, was a Rodgers and Hammerstein hit musical.

Though *The King and I* is banned in Thailand —the Thais are touchy about their monarchy—the stage and screen Mongkut at times resembled the real man. The real Mongkut did have a quick temper. He probably did summon Mrs. Leonowens at odd hours to help him, although it is unlikely that anything personal happened between them.

Mongkut certainly had ideas and practices that foreigners found unusual, especially—this is what has always intrigued Westerners most about the Thai royalty—his keeping a harem. "His own private Utah," as Anna Leonowens called it, in a derisive reference to the polygamy associated with Mormons at the time, occupied a third of the palace; virtually no adult male except the King was allowed in it. Mongkut's defenders insist that, because many of his wives came from prominent families, he accepted them to cement political relations. But the fact remains that he had 82 children by 35 wives, and this before and after 27 years' celibacy as a monk!

A thoroughly modern monarch

Mongkut (p. 37) was succeeded by the best and brightest of his sons, Chulalongkorn, or Rama V. In his long reign, Chulalongkorn sired some 77 children by 92 wives. Some of the wives were half-sisters; it was considered desirable to keep the royal blood pure rather than risk contamination by outsiders. In other respects, however, Chulalongkorn was a thoroughly modern monarch, and continued his father's work of leading a Westernizing revolution from the throne. At his coronation, for example, he flabbergasted his subjects by telling them never to prostrate themselves before the king again (this habit proved impossible to eradicate). He emancipated the slaves. He sent his, and others', children abroad to study (pp. 38-39) and had Western advisers at home. He astutely if ingloriously ceded non-Thai-speaking territory to the British and French, assuring Siam's survival as a buffer state

between. He started railroads, hospitals and school systems, and reorganized the government.

The list goes on, though the changes were not always ultimately for the better. Driving an electric car as early as 1902 (one of the first in Asia), and replacing many of Bangkok's canals with wide and then-spacious streets, he unwittingly became forefather to that noxious contemporary institution, the Bangkok traffic jam. Modern visitors wish he had stuck to royal barges.

A more serious problem with Westernization was that Westerners tend to believe in elective forms of government rather than in absolute monarchies, and the transition from one to another usually brings trouble. In 1932, when Chulalongkorn's son Rama VII was on the throne (having succeeded an undistinguished Rama VI), a small group of Western-educated Thais staged a bloodless coup—themselves establishing a tradition—with the hope of creating a parliamentary democracy and constitutional monarchy along British lines. Democracy was not an idea whose time had come. The next year brought the next coup. Since then there have been many changes of government, with the military either directly in power or just behind the scenes.

The 1930s and 1940s were chaotic. Rama VII abdicated, and Rama VIII, the present king's older brother, acceded while a schoolboy. During World War II, with the government bending to Japanese occupation while at the same time maintaining a clandestine relationship with America, Rama VIII stayed in Switzerland. When he returned, a likeable and intelligent young man of 21, he was found dead in the palace, apparently the victim of assassination, although the whole story has never emerged. Thailand then dropped to one of its lowest points since the sacking of Ayudhya.

The education of a king

Bhumibol Adulyadej, now King, was born in 1927 in Cambridge, Massachusetts, where his father, who died not long afterward, was in medical school at Harvard. Bhumibol (pronounced, approximately, POOM-i-pun) spent most of his childhood in Europe with the rest of his family, where he acquired a solid grounding in European languages, music and the arts. At the University of Lausanne he studied engineering and did well. After the family's return to Thailand and the trauma of his brother's death, the 18-year-old Bhumibol went back to Lausanne and took up law. He was a systematic man, and he wanted to prepare himself for his reign.

One problem was the increasing split between the country's city and rural folk, probably a result of the modernization efforts of Mongkut and Chulalongkorn. Urbanites were driving automobiles and taking on Western values and losing their "Thai-ness" while the peasantry were lucky to be driving oxcarts. Add corrupt officials, and it was a reasonably good scenario for communist insurgency. Bhumibol was progressive, and knew that the Chakkri dynasty was going to have to change again to keep up with the times.

Queen Sirikit, in sun hat, chats with group of Thai villagers about their health and living conditions.

Bhumibol married a cousin, now Queen Sirikit, and made her his sole consort; no more harems. When they returned to Thailand for his coronation in 1950, they began to tour the country, district by district. They brought doctors along, a hospital on wheels.

Later, as his thinking evolved, the King also brought along improved strains of rice seed, and fish for stocking streams, the products of his own agricultural research stations. He came to see that his country needed a gradual and nondisruptive upgrading of croplands, markets, schools and roads, using inexpensive means where possible. He always preferred waterwheels to water pumps. Western specialists would later call concepts like his, "integrated rural development" and "appropriate technology." Topographical map in hand, he sketched and proposed dams and irrigation canals—he has about 200 small-scale agricultural projects going now—and used his prestige and wealth to get them constructed.

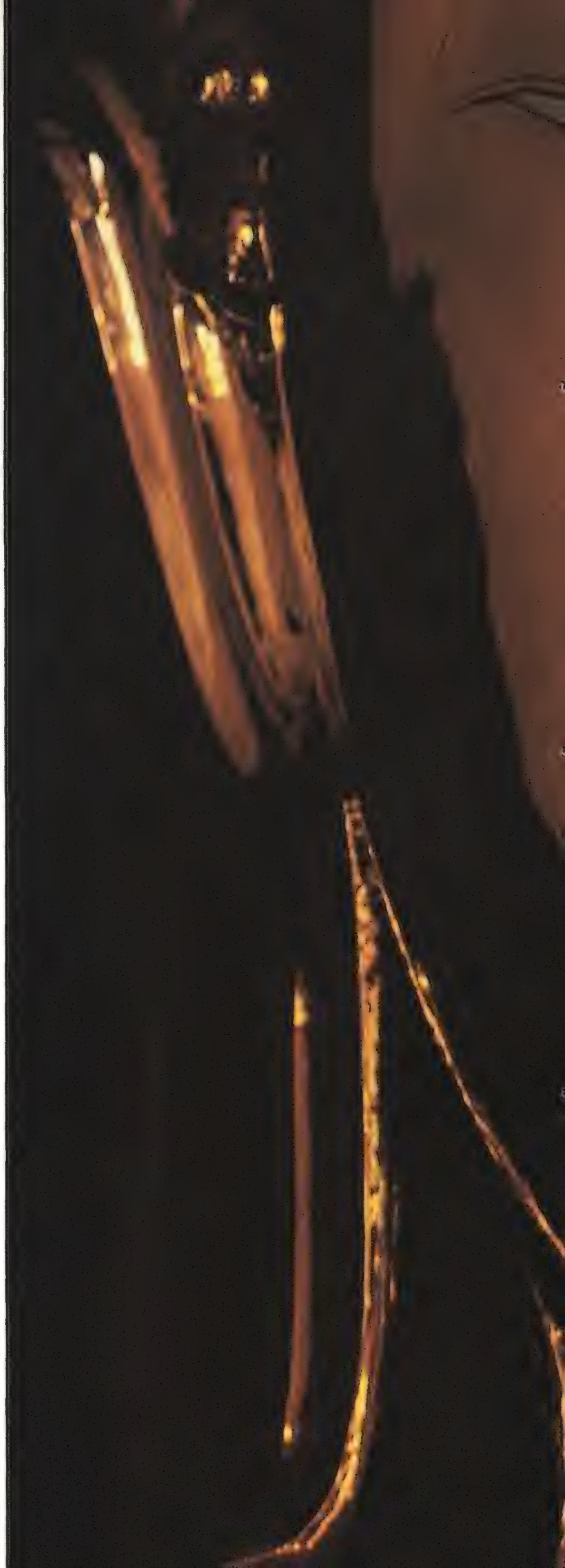
King Bhumibol is shy by nature, but he puts himself among his subjects, where he is needed most. His rural projects are in areas that otherwise might convert to antigovernment insurgency. During the four months of the year that he is not working in the countryside, he presides at endless ceremonies in Bangkok—presenting the diplomas, for example, to each of the

45,000 annual graduates of Thai universities. He jogs and meditates nearly every day. When possible, he plays the saxophone in jazz sessions on the radio.

Though he is sour with officials who do not carry out their duties properly, and cross-examines them minutely, the expression he most often presents in public is one of Buddhist impartiality. His face appears on bank notes and coins, and portraits of him and of the Queen are placed higher than other pictures on the walls of homes and office buildings as a mark of respect. Sometimes a family group, including the four now-grown children, is displayed as well. Governments come and go, but the King usually is not involved and only the country's small core of intellectuals seems to mind when he is. He is immensely popular.

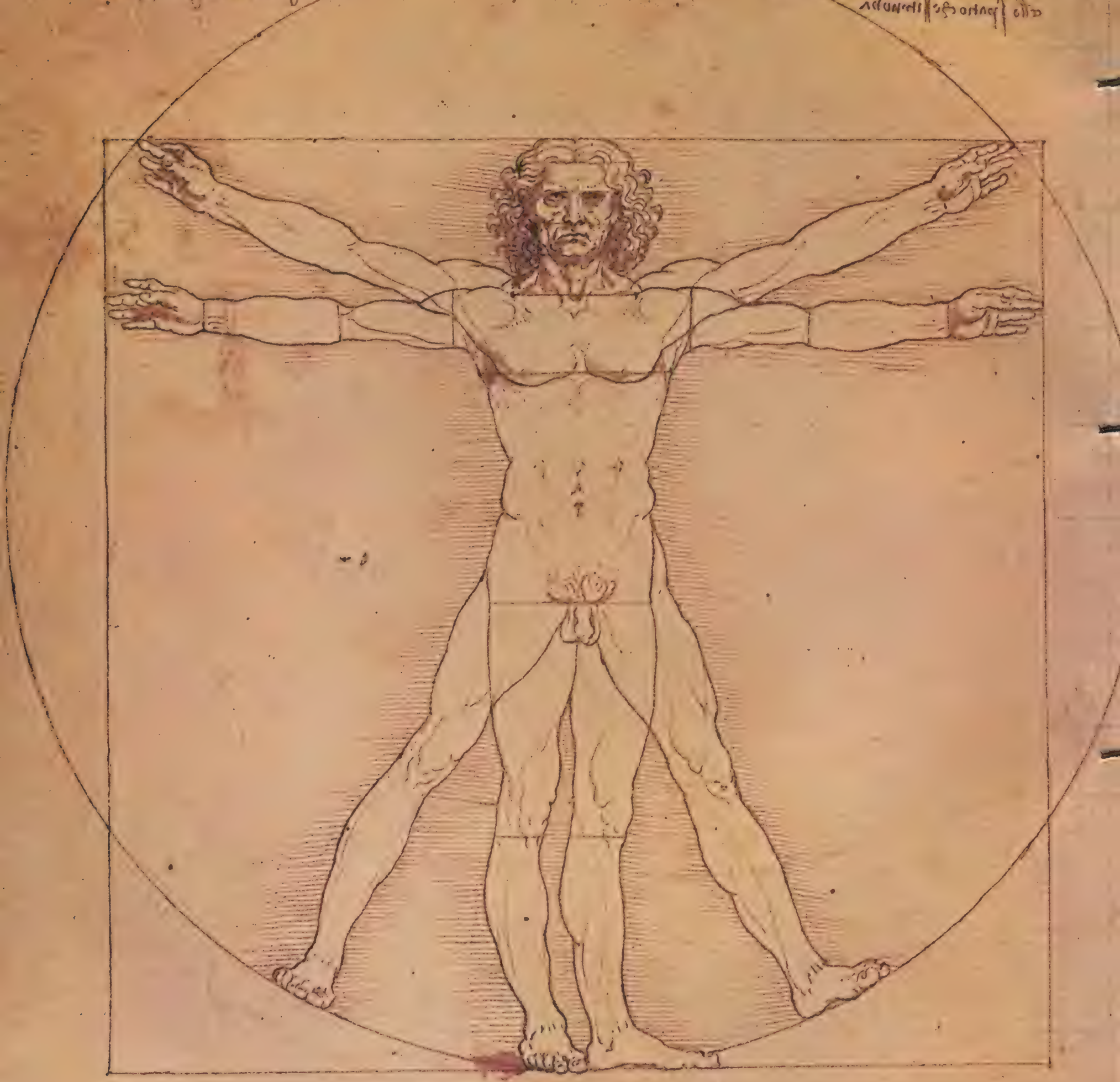
Recently, at the height of Thailand's bicentennial festivities, the King stepped into a royal barge on the Chao Phraya and was paddled downstream. Fifty barges accompanied him, one of the most spectacular waterborne processions in the dynasty's history.

The occasion symbolized Thailand's heritage which, since Mongkut's time, has been mixed with the West's. The King was carried along the shores of modern Bangkok, no longer a "village of the wild plum" but a chaotic, sprawling city of three million. He landed at the royal-palace grounds, with its red- and green-tiled roofs, temple spires and crenellated walls. From there, he was taken in a Rolls-Royce to a pavilion nearby where, at the moment deemed auspicious by the royal astrologer, he paid homage to all his royal forebears and to a Buddha image that Rama I had carried on his war elephant.



Gold Buddha was protected by a layer of stucco,
then moved to Bangkok, capital of Chakkri dynasty.

The artists and scientists of the Renaissance shared a fundamental belief: Man is the measure of all things.



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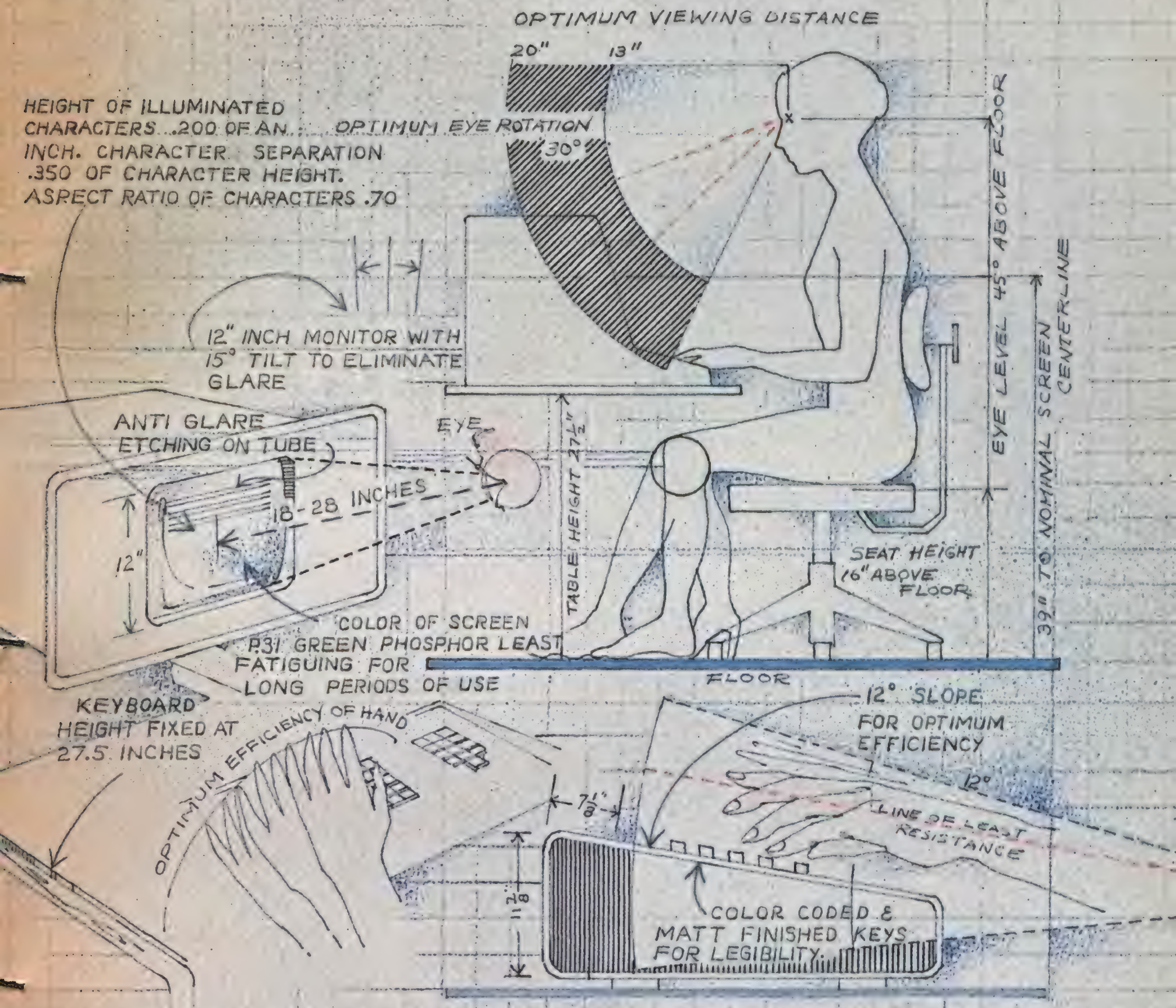
At Northern Telecom, we base our research on that belief. We mold technology to meet human needs.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30°
12" INCH MONITOR WITH 15° TILT TO ELIMINATE GLARE
ANTI GLARE ETCHING ON TUBE
EYE
18-28 INCHES
12"
TABLE HEIGHT 27½"
EYE LEVEL 45° ABOVE FLOOR
39" TO NOMINAL SCREEN CENTERLINE
SEAT HEIGHT 16" ABOVE FLOOR
COLOR OF SCREEN P31 GREEN PHOSPHOR LEAST FATIGUING FOR LONG PERIODS OF USE
FLOOR
KEYBOARD HEIGHT FIXED AT 27.5 INCHES
OPTIMUM EFFICIENCY OF HAND
12° SLOPE FOR OPTIMUM EFFICIENCY
12°
7 1/8"
LINE OF LEAST RESISTANCE
2 1/8"
COLOR CODED & MATT FINISHED KEYS FOR LEGIBILITY

This illustration from Leonardo da Vinci's Codex is an eloquent summary of the man and his Age. Leonardo's drawings show that he was an anatomist and a mathematician, as well as a consummate artist.

Today we tend to think of art and science as incompatible activities. But at Northern Telecom, we still believe that scientific research and development should be centered on human needs; that technology is not an end in itself but, like art, a way of enriching our lives.

Although we've received international recognition for our advances in computer and telecommunications technology, some of our most important research is done in the area of ergonomics: humanizing technology.

Our research teams in the United States and Canada work to make sure that the computer and communications systems we supply are easy to use, as well as technologically superior. We design equipment around the human body, so people are physically comfortable at work. Our systems communicate in language the operator can understand, not in "computerese." Terminals and other products look attractive, not intimidating.

This kind of research, where engineers, programmers, designers, and psychologists work together, is truly a Renaissance discipline. It's the way we make sure that with all the new ideas flowing through our networks, one old idea governs their design: Man is the measure of all things.

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Mauritshuis, Prince Johan Maurits' 17th-century home, has housed royal collection since 1822.

Art from the royal Dutch collection comes here for visit

As Holland and the United States celebrate 200 years of cordial relations, the famed Mauritshuis gallery sends on some treasures

By Hans R. Hoetink

The year was 1644. The Dutch Republic was at the apogee of its power, Dutch ships were plying the oceans bringing new wealth from such far-off places as New Amsterdam (New York), the coast of Brazil and the East Indies. In this prosperous setting, which has sometimes been called a "Commonwealth of Merchants," the arts flourished.

Frans Hals was using his dashing virtuoso brush to portray clergymen, officers, merchants, patricians, women and children. Rembrandt van Rijn was painting with uncommon luminescence. Somewhat later, Vermeer, Steen, Potter and Ruisdael began creating their respective visions of the world in which they lived. And Count, later Prince, Johan Maurits of Nassau Siegen, an ancestor of the present Dutch royal family, was putting the finishing touches on his elegant new house in The Hague.

Today, the Mauritshuis (at left), with its distinguished pilaster groupings of bright ashlar superimposed on dark brick, is certainly, along with the Royal Palace in Amsterdam, one of the most beautiful classical buildings in the Netherlands.

The luxurious but compact building, in which the Royal Picture Gallery has been housed since 1822, contributes its own air of distinction to the collection of superb 17th-century Dutch paintings it contains. The intimate displays are a compromise between a traditional princely gallery of human proportions and a museum employing modern techniques.

The possibility of sending 40 selected works from the Mauritshuis on an extended tour through the United States arose as the museum was closing its doors for restoration work. That this occurred in the very year in which the Netherlands and the United States celebrate 200 years of uninterrupted diplomatic and trade relations is a happy coincidence.

Many prominent Americans have recently joined to create an organization—Friends of the Mauritshuis—which is dedicated to strengthening the cultural ties between the United States and the Netherlands and, particularly, to helping the Mauritshuis further its programs of scholarships, educational facilities and seminars. The exhibition—"Mauritshuis: Dutch Painting of the Golden Age from the Royal Picture Gallery, The Hague"—which Her Majesty Queen Beatrix opened in Washington, D.C., in late April at the National Gallery of Art, will subsequently be shown in 1982-83 at the Kimbell Art Museum, Fort Worth (November 20, 1982-January 30, 1983), at the Art Institute of Chicago (February 26-May 29, 1983) and at the Los Angeles County Museum of Art (June 30-September 11, 1983). The exhibition probably will also appear at the Art Gallery of Ontario in Toronto and at the Metropolitan Museum in New York in 1984. The exhibition has received support from several donors, including General Telephone & Electronics Corporation and the Consolidated Foods Foundation.

The selected group of pictures, many of which were collected in the 18th century by Prince Willem V of Orange, represents Dutch art at its highest level. Not

Hans R. Hoetink has been director of Mauritshuis, Royal Picture Gallery of the Netherlands, since 1972.

Luminous proof of Johannes Vermeer's genius for color and light, *Head of a Girl* was painted about 1660.

Rembrandt pupil Carel Fabritius' *The Goldfinch,*
done in 1654, is a rare surviving example of his work.

Pieter van Anraadt's *Still Life with Earthenware Jug* is the only known still life by the artist.

only does one find widely known works by such masters as Rembrandt, Frans Hals, Jacob van Ruisdael, Jan Steen and Johannes Vermeer, but also outstanding examples by lesser-known artists such as Gabriël Metsu and Paulus Potter, as well as some who may come as discoveries to many Americans. In this way we hope not only to convey something of the special character, quality, charm and intimacy of one of the most distinguished collections of Dutch painting in the world, but also to transmit something of the variety and vitality of one of the most remarkable occurrences in the history of European painting—the emergence during the first half of the 17th century of so many painters of genius in an area of the less than 60 square miles between Amsterdam, Utrecht, Haarlem, Rotterdam and Dordrecht.

The speed and energy with which the culture of the young Republic developed a character of its

Considered the greatest of Dutch landscape artists, Ruisdael painted *View of Haarlem* about 1670.

own while successfully opposing the military power of Spain and freeing itself from the more developed Catholic Southern Netherlands is unparalleled in European history. The achievements of Dutch painters bear eloquent testimony to the diversity, energy and creativity of Dutch culture during its Golden Age.

It was one of the rare historical esthetic fruitions in which an entire society combines to produce a number of artists who can seemingly do no wrong, who create one masterpiece after another, as happened during the Renaissance in Italy and in the short spread of years which produced the Impressionists and Post-Impressionists in 19th-century France.

The true-to-life quality, directness of expression and spontaneous ease with which a painter like Frans Hals painted his portraits of children distinguish his *Head of a Young Boy* (opposite) as one of the best paintings produced in the 17th century. The numerous color accents and the touches and sweeps of the brush are set down without the slightest hesitation; no wonder the French Impressionists expressed their admiration for his technique two centuries later.

How different is Vermeer's famous *Head of a Girl* (p. 47). In this remarkable painting, which has justly been called the "Mona Lisa of the North," an impenetrable stillness surrounds the young girl. As always with Vermeer, the forms are created by the light and united with a most delicate perception of tones and

colors. Such colors—blue, yellow and white—Van Gogh remembered when he wrote from Arles in 1888 to his brother: "Here nature is *extraordinarily* beautiful. Everywhere and always the cupola of the sky is of an admirable blue, the sun has a radiance of pale sulphur and this is as sweet and charming as the combination of heavenly blues and yellows in the works of Vermeer van Delft. . . ."

Something of the same refinement of tone is evident in the exceptional *Still Life with Earthenware Jug* (p. 49) by the barely known Pieter van Anraadt, who was principally active in the eastern Netherlands. The painting illustrates the high level of quality which the Dutch attained even in the provinces. Van Anraadt was influenced by the work of Gerard ter Borch, who painted *Woman Writing a Letter,* one of the most attractive genre paintings in existence.

Among other portraits in the exhibition are the superb Rembrandt early self-portrait from circa 1629 and his late self-portrait of 1669, the year in which the great artist died (p. 52). The more exuberant side of the Dutch character speaks to us from the delightful genre paintings of Jan Steen, such as his *Girl Eating Oysters* (right). Apart from still lifes, portraits and genre pieces, the exhibition shows townscapes, religious paintings, landscapes and marine paintings.

French Impressionists admired Hals' brushwork. Here, his *Head of a Young Boy*, painted about 1620-25.

Rare work by the mysterious Fabritius

The hallmark of the Mauritshuis for many visitors, however, is the charming and simple panel, *The Goldfinch* (p. 48), one of only eight works in existence that can be assigned with certainty, according to a recent monograph, to the original and mysterious Delft painter Carel Fabritius. This will be a first for Americans, as none of the eight is in the United States. The simplicity, deft execution and command of perspective of this little picture make it one of the most attractive of all Dutch 17th-century paintings.

The qualities of high finish and ingenuity in Dutch painting, as well as the all-embracing realism, the interest in everyday happenings and the appearance of Dutch towns and countryside, intrigued collectors outside the Netherlands as early as the 17th century. Since that time, Dutch art has been collected all over the world, in a manner precisely in tune with Prince Johan Maurits' motto: *Qua patet orbis* (As far as the world goes). The notions of universality which lie behind this device of the founder of the house whose home today contains one of the finest Dutch collections continue to justify its existence: like all great art, these paintings ultimately belong to the whole world, as visitors to the exhibition realize when they see and feel the richness of human experience indelibly expressed.

Jan Steen's *Girl Eating Oysters* displays one aspect of wealthy life; wine and oysters were for the rich.

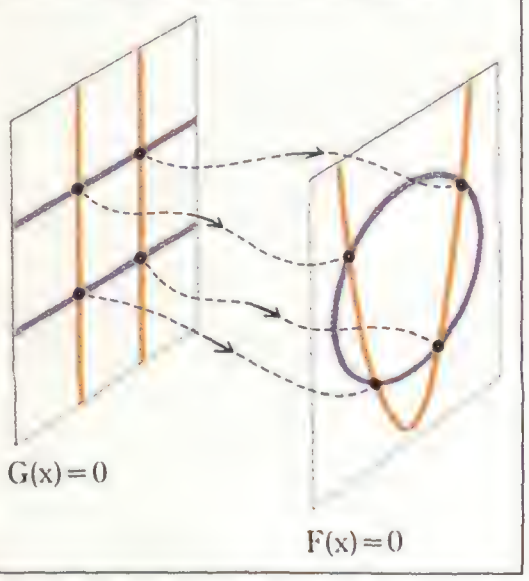
Some 40 years separate two Rembrandt self-portraits: above, about age 23; below, probably in 1669, at 63.

Abraham van Beyeren's sumptuous *Banquet Still Life* was unknown before its acquisition in 1977.

The Continuation Method

The need to solve systems of polynomial equations arises in pursuits ranging from geometric optics to chemical kinetics. A practical method of solution, developed at the General Motors Research Laboratories, provides designers of mechanical parts with a new capability.

Two equations in two unknowns



The two pairs of parallel lines of G(x)=0 evolve into the parabola and ellipse of F(x)=0.

The three pairs of parallel planes of G(x)=0 evolve into the paraboloid, ellipsoid and cylinder of F(x)=0.

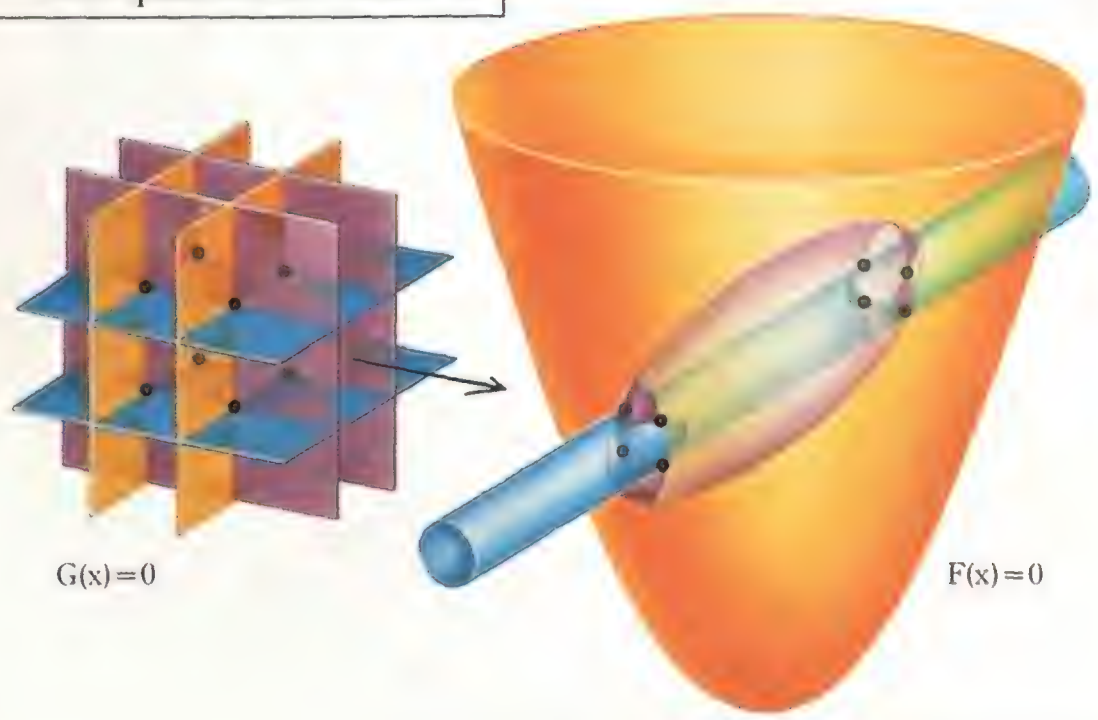
CLASSICALLY difficult non-linear equations—those made up of polynomial expressions—can now be solved with reliability and speed. Recent advances in the mathematics of continuation methods at the General Motors Research Laboratories have practical implications for a wide range of scientific and engineering problems. The immediate application at General Motors is in mechanical design. The new method finds all eight solutions to three quadric equations in a few tenths of a second—fast enough for computer-aided design on a moment-to-moment basis. Algorithms based on this method are critical to the functioning of GMSOLID, an interactive design system which models the geometric characteristics of automotive parts.

Systems of non-linear equations have been solved for many years by "hit or miss" *local* methods. The method developed at General Motors by Dr. Alexander Morgan is distinguished by being *global* and *exhaustive*. Local methods depend on an initial estimate of the solution. They proceed by iterative modifications of this estimate to converge to a solution. However, success is not guaranteed, because there are generally no practical guidelines for making an initial choice that will ensure convergence. Reliability is further compromised when multiple solutions are sought.

Global methods, by contrast, do not require an initial estimate of the solution. The continuation method, as developed by Dr. Morgan, is not only global, but also exhaustive in that, assuming exact arithmetic, it guarantees convergence to all solutions. The convergence proof rests on principles from the area of mathematics called differential topology.

Here is the way continuation works. Suppose we want to solve a system $F(x)=0$. We begin by generating a simpler system $G(x)=0$ which we can both solve and continuously evolve into $F(x)=0$. It is important that we select a G properly, so the process will converge. Dr. Morgan has devised a method for selecting G which gives rapid convergence and reliable computational behavior. He first applied a theorem established by Garcia and

Three equations in three unknowns



Zangwill to select G. However, the resulting algorithm could not achieve the speed and computational reliability necessary for several applications. Next, he utilized some ideas from algebraic geometry—"homogenous coordinates" and "complex projective space"—to prove a new theorem for selecting G. The result of Dr. Morgan's efforts is a practical numerical method based on solid mathematical principles with innate reliability.

Reliability is the critical element for mathematical methods embedded in large computer programs, because errors may not become evident until after they have ruined a large data structure compiled at great expense and effort. Speed is also important to economical real-time implementation. This method has proved to be reliable and fast in solving problems involving equations up to the sixth degree in three or four variables. However, there are obvious practical limitations on the number of equations and their degree, due to the limited precision of computer arithmetic and computer resource availability.

THE FIGURES illustrate the transition from simple $G(x)=0$ to final $F(x)=0$. In both figures, the "simplicity" of $G(x)=0$ is reflected graphically in its linear structure—seen as lines and planes. The non-linearity of $F(x)=0$ is seen in the curvature of the final shapes in each figure.

In figure 1, the four dots on the left plane represent the set of simultaneous solutions to the system of equations $G(x)=0$. The four dots on the right plane represent the set of simultaneous solutions to the system of equations $F(x)=0$. The dashed lines represent simultaneous solutions to intermediate systems whose graphs would show the evolution from one configuration to the other. With the addition of a third dimension in figure 2, the number of dots representing simultaneous solutions doubles. Representation of the transitional points, as in figure 1, would require a fourth dimension.

"Continuation methods, although well known to mathematicians," says Dr. Morgan, "are not widely used in science and engineering. Acoustics, kinematics and non-linear circuit design are just a few fields that could benefit immediately. I expect to see much greater use of this mathematical tool in the future."

THE MAN BEHIND THE WORK

Dr. Alexander Morgan is a Senior Research Scientist in the Mathematics Department at the General Motors Research Laboratories.

Dr. Morgan received his graduate degrees from Yale University in the field of differential topology. His Ph.D. thesis concerned the geometry of differential manifolds. Prior to joining General Motors in 1978, he taught mathematics at the University of Miami in Florida and worked as an analyst at the Department of Energy's Savannah River Plant in South Carolina.

While serving in the U.S. Army, Dr. Morgan participated in the development and analysis of simulation models at the Strategy and Tactics Analysis Group in Bethesda, Maryland.

Dr. Morgan's current research interests include the qualitative theory of ordinary differential equations and the numerical solution of non-linear equations.

GM General Motors
The future of transportation is here

By Mark Kindley

For eye-in-the-sky inventors, kites can be much more than toys

Some fly like bed sheets, some like pinwheels; all are serious. One goal is to put windmills where the wind blows hardest: in the jet stream

Father and son dance. The son, David, holds the controls. His father, Miles, standing across the brown California field, holds the kite. The wind is the music and they respond to it in pantomime, joined by the lines between them, waiting for the right beat to release the kite.

The kite (at left) is in the shape of an airplane. It has no long flowing tail or brightly colored markings, but there is elegance in its simple form. This afternoon, in gentle breezes, it travels a mere four feet—from Miles' hands to the ground.

Miles Loyd is an engineer at the Lawrence Livermore National Laboratory in Livermore, California. In his mind's eye the kite at his feet in the dry grass is an electricity-generating system. He sees a kite larger than a Boeing 747 cutting across the wind with a force that he believes will be able to run turbines and power whole communities.

Miles reaches down and picks up his kite, gently untangling its lines, from the weeds. He makes a minor adjustment with a screwdriver. Together he and David offer it to the wind again and this time it flies, yanking at David as it performs frantic figure eights at speeds up to 75 miles per hour.

Some kites are beautiful. Some are sporty and some barely fly. Recreational kites today are big business. The annual convention of the American Kitefliers Association and the Smithsonian's own kite festival attract many of the nation's prominent kite fliers.

There is interest in the serious use of kites as well. Researchers are designing kites to generate electricity, to study the sky from the ground and to help save sailors in distress. Although they fly their kites for very different reasons—and usually in very different fields—for the child with the too-tearable diamond-shaped kite and the scientist with the mathematical computer model of simulated flight, the experience of the kite still has about it a certain personal awe. It flies.

For more than five years, the Loyds have shared the conviction that kites flying across the wind can be used to produce energy. Working in his spare time, Miles has applied to his kites the same rigorous analysis he employs working with nuclear weapons at the Livermore Laboratory. A kite flying across the wind will fly faster than the speed of the wind. If the lift-to-drag ratio is ten to one, Miles explains, the kite theoreti-

Beside San Francisco Bay, light on experimental kite traced its path as camera recorded multiple images.

cally can go ten times as fast as the velocity of the wind.

The energy captured by a kite flying in endless circles hundreds of yards off the ground, Loyd figures, can be converted to electricity three ways (opposite): 1) Rotors could be mounted on the wings of the kite that would turn generators on board. They would work like conventional wind turbines on towers, but turn much faster. 2) The tether from the kite could be secured to a pump. Loyd visualizes something similar to the classic "horsehead" pump used in the oil fields, except that the pump would be worked from above by the tether pulsing as the kite surges across the wind in circles. The kite would pull hardest on the tether near the bottom of each circle, slacking off as it reaches the top. 3) A turbine at the front of the kite could turn a crankshaft within. Separate lines from the crankshaft to the ground would act as connecting rods, producing rotary motion.

Loyd estimates that a generating system based on a kite the size of the C5 transport plane could produce as much as 13 megawatts of electricity, enough to power a community of thousands.

During the past five years the Loyds' kite studies have evolved from a hobby to a sophisticated research project and have outgrown their workshop in the garage. The next step is the production of a prototype large enough to demonstrate what their small kites have led them to theorize.

In the designs of power-generating kites, the logic employed often exhibits a certain airy quality. Sometimes the conclusions seem both obvious and ridiculous at the same time. The best place for a windmill is where the wind blows hardest. That's obvious. The wind blows hardest (more than 100 miles per hour) about 30,000 feet above the ground in the jet stream. Therefore the best place for a windmill is in the jet stream. Ridiculous? Maybe.

The Solar Energy Research Institute (SERI) of Golden, Colorado, awarded Tetra Tech, of Pasadena, California, $35,974 to consider the feasibility of building a windmill that flies. Engineers Okitsugu Furuya and Shin Maekawa set forth to outline the parameters. Studies have shown the energy density of the wind in the jet stream to be about 30 times what it is on the ground. A surface area of one square foot on the ground can produce .046 kilowatts of energy from the wind. The same surface area elevated into the jet stream would produce as much as 1.49 kilowatts. Getting the windmill up to that kind of altitude would be the real trick.

They considered two earlier designs. A team at the Institut für Angewandte Systemtechnik in Austria had proposed a tethered balloon that would lift a set of rotors into the jet stream. It would take off and land handily, regardless of the surface wind, but there were clearly some problems with buoyancy. In addition, the two million cubic feet of helium it required made it too expensive.

Another team at the University of Sydney in Australia proposed an airplane-shaped kite with rotors on its wings instead of propellers that would fly into the jet stream. This system saved on the helium but would require large and prohibitively expensive spaces for takeoffs and landings. Even with enough space, both maneuvers could be difficult if the wind proved uncooperative. (More recently Bryan Roberts and John Blackler, of the same group, have conceived a rotary-wing platform that would function as a tethered windmill in the upper atmosphere.)

Taking full advantage of hindsight, Furuya and Maekawa came up with their own design, which borrows features from kites, airplanes and helicopters. Their tethered wind-energy system (p. 64) looks somewhat like the Australians' airplane kite. During takeoff and landing the wings can be turned 90 degrees and the rotors, which are used to catch the wind while hovering in the jet stream, metamorphose into propellers to move the kite up and down.

Still lacking are superlight generators, transformers and rectifiers to be mounted on the kite. With two rotors mounted on each wing, the system has an en-

Sketches illustrate Miles Loyd's concepts for using planelike kites to extract energy from the wind. Kite at the top is a flying windmill; the wind turns rotors that spin generators. At center, a kite flying in circles powers a "horsehead" pump on the ground. In the bottom version, a rotor on front of the kite turns a crankshaft; separate lines act as connecting rods to produce rotary motion on ground.

Domina Jalbert flies one variation of parafoil at the 1981 American Kitefliers Association convention.

ergy potential of two megawatts or more, says Furuya. The most powerful land-based wind turbines, by comparison, can currently produce about 2.5 megawatts, but they require two steel blades with a total length of 300 feet to do it.

Furuya estimates that the kite system can be built for about $2.3 million. At that price, theoretically, it should be possible to generate electricity for 8.4 cents per kilowatt hour. The best place to fly such a kite, they found, was over the northeastern United States, where the jet stream is strongest and, appropriately enough, the need for some form of renewable energy the most pressing.

Flying a kite bigger than a house—with five miles of cable flapping—through what is perhaps the world's most congested airway, presents a whole other set of problems that, at the outset at least, can seem as outlandish as a flying windmill might seem to the uninitiated. Furuya is confident it can be done.

But it won't be soon. Private industry has not jumped at the chance to build the first one and government funds are not presently available. Rick Mitchell of SERI says that a dwindling budget for research on renewable energies in general has pinched off funds well before anyone could get tethered windmills on *any* list of priorities. "Not necessarily because they have less potential," Mitchell is quick to add, "but because land-based wind turbines have been around longer and there's less risk of failure. Meanwhile," he adds, "we're wasting all the energy that's blowing across the United States every day."

The kite as last resort

Throughout history, Man has typically turned to the kite only when he could not come up with some more down-to-earth, if not more dignified, agent for his efforts. Often the kite has been upstaged by accomplishments it made possible. In the late 1840s, for example, the United States and Canada had to wait on either side of Niagara Falls while a youngster named Homan Walsh, says kite-flying champion Will Yolen, sailed a kite across the chasm to make possible the pulling over of thicker and thicker lines and eventually a cable. Finally, the first railroad suspension bridge between the United States and Canada was completed. Walsh is said to have received the sum of ten dollars for his efforts and was summarily forgotten.

On December 12, 1901, Guglielmo Marconi (SMITHSONIAN, March 1982) flew a kite to hoist an antenna in Newfoundland as part of the first successful transatlantic wireless transmission—from Poldhu in Cornwall to St. John's. The kite was replaced for later transmissions and its name, the Baden-Powell Levitor, drifted off into obscurity.

The largest kite ever flown—a parafoil—fills with wind at Magnuson Park in Seattle, Washington.

That Benjamin Franklin flew a kite in a June thunderstorm in 1752 is sometimes used as an example of how little he cared about what other people thought of his "eccentricities." In fact, Franklin was extremely self-conscious and flew his kite simply because it was, at the time, the best available vehicle he could use for his scientific studies.

It has always been a characteristic of scientific innovators that they seek an underlying simplicity in their understanding of outwardly complex phenomena. The kite is a metaphor for the kind of simplicity, perhaps even purity, that draws them.

Kites have a way of capturing a receptive mind. An enterprising eight-year-old, Domina Jalbert, made his first kite from scraps of paper pasted together with a flour-and-water glue. He got enough string by running errands in his Quebec neighborhood and waiting to get the cord from the packages he delivered. When he finished his kite, it flew well enough—but he could not get it to fly over his house so that his mother could see it. Next time he did.

Jalbert (opposite) has made a life of kites. In the 1920s he flew kites with advertising slogans emblazoned on their sides. One year, one of his kites was credited with helping elect the only Republican alderman in Rhode Island. On a less propitious occasion, another of his kites tangled with the power lines in a small Rhode Island town, shorting out the electricity and, as he remembers it, trapping a number of angry and rather damp ladies under their respective hair driers in a local beauty salon.

Later he designed a series of kites for Admiral Richard Byrd's expeditions to the Antarctic. For a chemical company he made a cylindrical balloon with small extended fins, called a Kytoon, that was stable in high winds because of its kitelike surfaces, but which could fly with no wind because it was filled with helium.

In 1964, flying to his home in Boca Raton, Florida, Jalbert was daydreaming about the dynamics of the wind, as usual, when he came up with a kite design that amounted to a synthesis of the countless things he had learned over the years. Back in his Aerology Laboratory, in what he describes as a frenzy of inspiration, he began sewing lengths of cloth together to make compartments shaped like a cross-section of a wing. He sewed the compartments together side by side, leaving them open at an angle along the leading edge of the wing and stitching them almost closed in

Denver writer Mark Kindley wrote on meson-beam therapy for cancer patients in the October 1981 SMITHSONIAN. *He is only an infrequent flier of kites.*

Bill Watson flies prototype of an inflatable rescue kite for sailors in distress, conceived by Eugene Murphy.

the back. He attached fabric triangles under several of the compartments as ventral fins (he called them "flares") and proceeded to run a line from each one to a nexus with a tether. There was not a stick in it.

Jalbert carried his creation outside like an armful of laundry, and when he released it to the wind it flew like a bed sheet blowing off a clothesline. But as each compartment filled with wind, the parafoil took shape, holding the wind inside for strength. It flew as if the wind actually liked it.

The parafoil flies almost straight up on its tether and has tremendous lifting capabilities. It has been used to hoist meteorological instruments and antennas. Jalbert says that under optimal conditions a parafoil could reach the jet stream.

The largest kite ever flown (p. 61) was a parafoil put together by faculty and students at Edmonds Community College in Lynnwood, Washington. Its surface area was 3,640 square feet. It weighed about 400 pounds and was strung with 80 lines from fins under its billowing hulk. In winds of between 15 and 18 miles an hour the behemoth flew to 300 feet before one of the fins tore.

Radical new kite designs that work are hard to come by. Not just any daydream will fly. As simple as it looks when it is flying, the kite must be responsive to ever-changing forces. Trying to come up with a new design is like redesigning the bird.

By the 1940s, Man could fly reasonably well. But he needed an airplane to do it. Aeronautical engineer Francis Rogallo, of the National Advisory Committee for Aeronautics (NACA), the precursor of NASA, at what is now Langley Research Center in Virginia, felt there had to be a simpler way. He was determined to come up with a flying device that the average man could not only fly, but then fold up under his arm and carry away. Working at home, Rogallo and his wife Gertrude began experimenting with fundamentally new wing designs, many of which could not make it from one end of the living room to the other. Their better efforts they tested in a homemade wind tunnel which used a 36-inch fan.

NACA expressed little interest in Rogallo's after-hours activities, but allowed him to file for a patent in 1948 on the "flexible wing," which in its original design was little more than a swatch of flexible material tethered at strategic points. After the Russians launched Sputnik in 1957, however, the newly born NASA speeded up the space program and Rogallo was able to test his flexible wing in the wind tunnels at Langley as a possible reentry or landing vehicle for returning spacecraft.

For a while it looked as if the Rogallo wing might make it possible for returning Gemini spacecraft to land on land. When NASA elected to stay with the parachute instead, astronauts were left to drop into the ocean as usual.

The Rogallo wing has gone through several transformations, including a few that sound like props in a James Bond movie. In the 1960s, for example, the U.S. Army tried equipping a jeep with a Rogallo wing so that it could be towed through the air. Rogallo wings, in the form of hang gliders, have even been used by stunt men at Cypress Gardens.

The hang glider has come closest to accomplishing Leonardo da Vinci's goal of a portable flying machine for the average man. It is not the average man who flies one, however. Rogallo, now 70, can still be seen with his flying machine strapped to the side of his Volkswagen bus on the way to an afternoon's flight. Retired since 1970, he thinks NASA may take another look at kites when the time comes for reusable spacecraft smaller than the shuttle.

Working for the Weather Bureau

Kites have been used to study the sky for centuries. The U.S. Weather Bureau used box kites, modified from the original 1890s design by Lawrence Hargrave, well into the 1920s. Box kites were light, inexpensive, and could carry a respectable payload into the wind. If there was not any wind, of course, the Weather Bureau could be grounded. If there was too much wind, the meteorologists watched in horror as their kites broke loose and wafted off on cross-country voyages. With increasing use of airplanes and balloons, the weathermen were able to retire their kites.

Balloon variations do appear. At the National Center for Atmospheric Research (NCAR) in Boulder (SMITHSONIAN, April 1982), Robert McBeth set out to evaluate the types of balloons that could carry a special battery of meteorological instruments. David Call, an electronics engineer, was put in charge of developing the project; he later left NCAR, redesigned his efforts, and formed Atmospheric Instrumentation Research (AIR), which produces the aerodynamic balloon system called the "Tethersonde" (p. 65). The complete package includes a balloon colored bright international orange, instruments to record humidity, altitude, temperature, wind speed and direction, a ground receiver that digitizes the data on computer-compatible "tapes" and prints it out in standard scientific units, and an electric winch—all of which can fit very handily into the trunk of a small sedan. The Tethersonde has been used to help examine meteorological conditions or conduct air-pollution studies everywhere from Japan to Los Angeles. In a less rigorous technological application, farmers use the balloon to scare birds. Call is currently working on a more kitelike design, incorporating a shape somewhat like a diamond. He says he has already flown it successfully in winds greater than 50 miles per hour.

TALA Inc., of Roswell, New Mexico, has come up with a new kite design for wind study. The Tethered Aerodynamically Lifting Anemometer (TALA) features a flexible kite that is rigid only along two spines that run from front to back. One version can fly as high as 800 yards or so, the other in winds greater than 80 miles an hour. An inelastic Kevlar line transfers the wind force directly to instruments on the ground. TALA is primarily used for siting wind-energy conversion systems all over the world. Windshear studies have been conducted on the Canary Islands to make flying into the islands safer. The system is particularly well suited to studying wind-dispersion patterns around nuclear or chemical plants where it can help to chart the course of escaping toxins.

After a career that included stints as a fighter pilot for the Royal Air Force and a test pilot for the U.S. Air Force, Eugene Murphy is accustomed to thinking about emergencies. Now president of Lifesaver Industries in Santa Monica, California, a marketer of vehicle safety devices, Murphy got to thinking one day, while he was stopped in traffic, that if a person were lost at sea and he happened to have a kite with him, he could fly it to make it easier for his rescuers to find him. (Downed pilots had used a somewhat similar arrangement during World War II.) If there was no wind, Murphy mused, he would need a balloon. But, if there happened to be too much wind, a balloon would get blown into the water. Then he would simply be lost at sea with a wet and useless balloon. Hmmm. . . . The light changed and he drove on.

During a period of several months, Murphy's mind drifted back to the image of his unhappy sailor. Talking with the U.S. Coast Guard, he learned that radar can pick up, say, a small wooden boat only within a range of 10 miles under the best conditions, much less

Hang glider carries its pilot as high as 500 feet during shows at Florida's Cypress Gardens.

Shin Maekawa, left, and Okitsugu Furuya display kite that could carry wind turbines in the jet stream.

in stormy seas. He also found that there are about 6,700 boats in Marina del Rey harbor alone and that the pleasure-boat flotilla in the United States numbers in excess of 14 million. Some of these vessels are taken to sea by individuals who stand a very good chance of getting lost—like the legendary sailor who, when asked by the Coast Guard what his position was, shot back, "executive vice president in charge of sales." Hmmm . . . indeed.

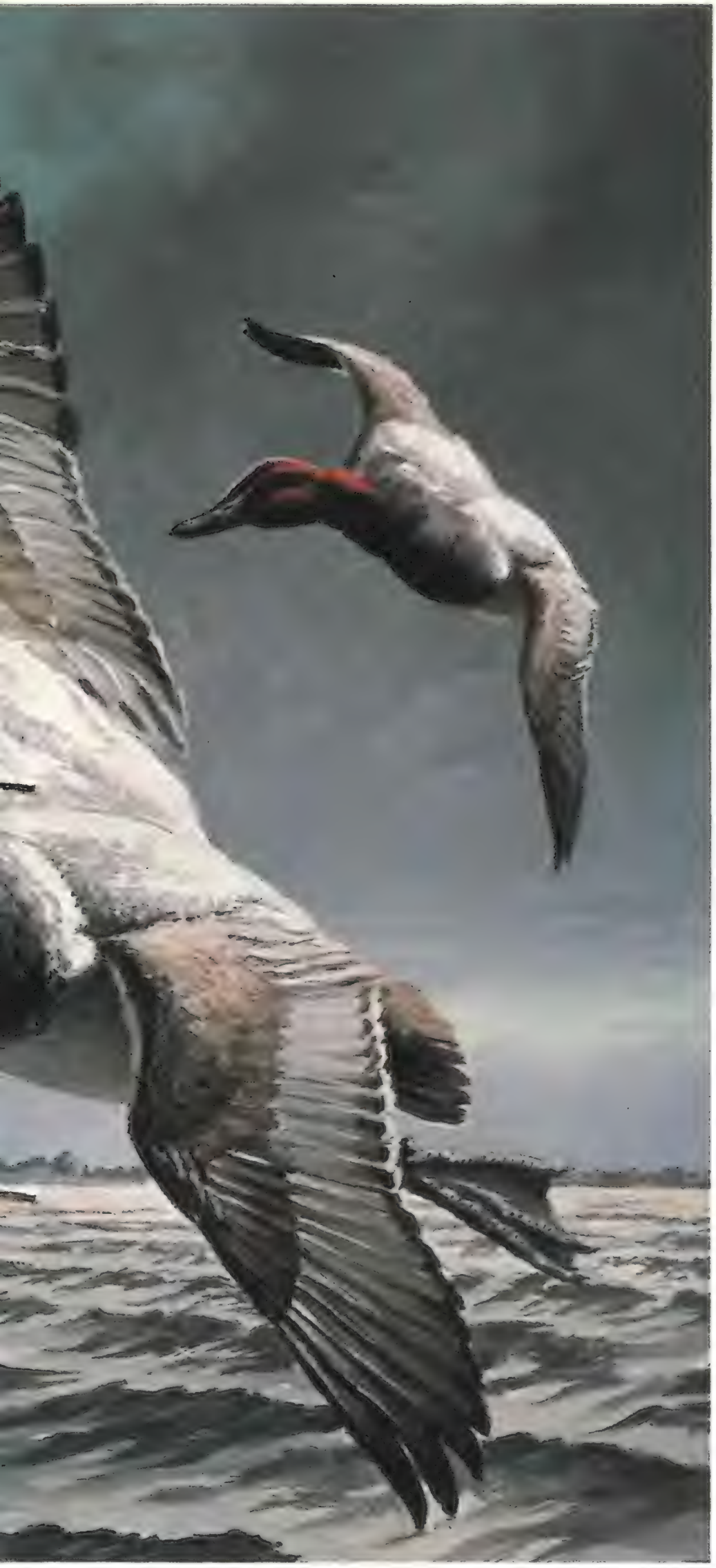
Murphy did know a good idea when he had one, and he knew how to find people who could make it work. Murphy delegated the design problems to Bill Watson, who had helped build Paul MacCready's pedal-powered airplane, *Gossamer Albatross*. An inveterate tinkerer and problem solver, Watson took Murphy's idea and came up with a helium-inflated kite that looks vaguely like an air mattress (see cover and p. 62). He made it of aluminum-coated Mylar so that it would be light and strong and appear on a radar screen a number of miles away. Some special material on the outside will enable the slightest sunlight to heat the kite enough to register on the infrared sensors the Coast Guard hopes to install in its search-and-rescue helicopters. The kite's tether will carry an antenna so that a distress call can be sent out in all directions above the roughest seas. A U.S. Army contract to provide prototypes for testing has been assigned to MacCready's AeroVironment company for development.

Other kite entrepreneurs have not shared Murphy's success. Jack Campbell of Seal Beach, California, is a maverick inventor who has already devised the "air shoe," an improvement on the traditional running shoe, and the "bike leash," basically a retractable chain that emerges from a hole in the ground, designed to take the place of more cumbersome bicycle racks. Neither of them has yet become a household item. Now he is trying to get a box kite to climb and dive endlessly, spinning a flywheel on the ground a bit like a yo-yo and generating electricity. He admits that he does not have all the details worked out yet, but there is no doubt in his mind that it will work.

When humanity wanted to learn how to fly, the collective compulsion resulted in any number of strange flying machines. Now humanity wants new sources of energy and this collective compulsion has got Jack Campbell flying box kites on the beach—and occasionally into the beach. "It works," he says, somewhat abstractly. "I can feel it in my hands. The power is there."

With kitelike aerodynamic qualities, Tethersonde rises within the glass canyons of downtown Denver.

David Maass' canvasbacks in a storm were chosen for the 1982-83 migratory-bird hunting stamp.



By Jim Doherty

Sleek painted ducks lay golden eggs for wildlife artists

Federal duck-stamp funds save waterfowl habitat in 42 states—and bring instant riches to the lucky artists who design them

Actual duck stamp, which goes on sale this month, will be about the size of facsimile shown here.

Every autumn, millions of migratory waterfowl surge down North America's four principal flyways to their wintering grounds in the South. At about that same time, a different kind of migration takes place in Washington, D.C., when several hundred bird lovers flock together for a long day of gazing at geese, widgeon, teal and mergansers.

The setting is not, as you might expect, a marshy stretch of the Potomac River. It is a gloomy auditorium in the headquarters building of the U.S. Department of the Interior. The birds, moreover, are not real—they are paintings. There are hundreds of them and they are presented, one by one, to a jury of five seated around a floodlighted table.

The occasion is the annual judging of a hitherto

Jim Doherty, formerly at Newsweek *and* National Wildlife, *wrote last month about eagles in art and life. He currently lives in Ixonia, Wisconsin.*

Bonanza for ducks, geese, wildlife artists

David Maass, latest winner, in his Minnesota studio; print sales could bring in some 3.5 million dollars.

little-known but increasingly prominent artistic event that is much more exciting than its workaday name—the Federal Duck Stamp Contest—implies. Unless you are a hunter, a conservationist, a wildlife artist, art dealer or collector, you may not know what a "duck stamp" is, and possibly you could not care less. If, on the other hand, you are interested in something as simple and basic as money, then never mind the rest. This contest is for you. Some have dubbed it the "richest art competition in the world"—a multimillion-dollar sweepstakes any artist may enter although, for the first time this year, an entry fee will be charged. Funds generated by duck-stamp receipts also, not incidentally, help make possible one of the nation's oldest, best-financed and most successful wildlife conservation programs.

You must understand, first of all, that the duck stamp—which is sold across the counter at all first- and second-class post offices for $7.50—is not used for mailing letters. It is a revenue stamp, officially the Migratory Bird Hunting and Conservation Stamp (p. 67), and it must be purchased by anyone 16 or older who wants to shoot waterfowl. In July of each year, a new stamp goes on sale and that is where the contest comes in: the painting selected by those five judges in the agency's auditorium every November ends up as the design on the following year's stamp.

For its creator, the five-by-seven-inch portrait is a passport to instant wealth. Not a penny of it comes from Uncle Sam: the windfall derives instead from selling prints made from the original artwork to private collectors. In recent years, the number of buyers has boomed. All the contest winner has to do is make the prints available at upwards of $135 per copy (unframed) and the cash rolls in like geese hitting a cornfield at sunrise.

No longer a sign painter

Take John S. Wilson. Two years ago, the bespectacled outdoorsman was a 51-year-old sign painter in Watertown, South Dakota. A self-taught artist, he entered a painting of two ruddy ducks (opposite) in the stamp contest and won. When he heard the news over the phone, Wilson started shaking. "I imagine," he stammered, "that this is going to mean a big change in my life." He imagined correctly. The 16,000 copies of his ruddy-duck design will probably gross more than $2 million. Wilson, who could take in about $800,000 in gross income, no longer paints signs for a living.

Not every contest winner is plucked out of oblivion. Some of the country's best-known wildlife artists have walked off with the prize and several have done so more than once. Maynard Reece (p. 74) of Iowa, a prolific free-lance illustrator for outdoor magazines in the

1950s and '60s and a premier bird artist today, has won the contest five times. Virginia's Edward J. Bierly, a versatile wildlife painter and a former National Park Service employee, is a three-time winner. Other established artists who have won recently are Albert Earl Gilbert of Connecticut and Minnesotan David A. Maass (opposite), the current champion, and one of seven artists who has won the contest at least twice.

It is easy to see why the contest has come to be regarded as the Super Bowl of wildlife art, but its real purpose has nothing to do with making artists rich. "This program is for the birds," insists Robert W. Hines, a Virginian who designed the winning duck-stamp entry in 1946 and was involved in running the contest from 1947 until his recent retirement from the U.S. Fish and Wildlife Service. "The painters get the publicity but the ducks and geese still get most of the gravy." That is because the $15 million or so that the government earns annually from the sale of duck stamps is used to buy up marshland and other kinds of critical waterfowl habitat, which is what Congress created the program for back in the Dust Bowl days.

Bad times for waterfowl

At that time, America's migratory water birds faced a disaster. For decades, the marshes where they fledged, together with the staging areas that sustained them on their migrations and the southern bottomlands that sheltered them in winter, had been rapidly disappearing. Late in the 1920s, a prolonged drought that devastated much of the country threatened to finish the job farmers and urban developers had begun much earlier. Where once the nation's rivers and coastal regions were visited by seemingly infinite flocks of geese and ducks, many areas now were bereft of those birds all year long.

To the rescue came an improbable pair of conservationists. One, President Franklin D. Roosevelt, was a patrician Easterner and pragmatic politician confined to his wheelchair. The other, Jay N. (Ding) Darling, was a sentimental Midwesterner, twice a Pulitzer Prize-winning cartoonist for the *Des Moines Register* and a robust outdoorsman (p. 71). When Congress established a national refuge system for waterfowl in 1929, it failed to provide adequate funding, and Darling came up with a novel solution: a federal revenue stamp. He spearheaded a crusade to sell the idea to Congress, and Roosevelt appointed him head of the old U.S. Bureau of Biological Survey (in the Department of Agriculture), the forerunner of the Interior's Fish and Wildlife Service. In 1934, Congress passed a law authorizing the stamp, Roosevelt signed it and Darling designed the first edition (p. 71). Duck-stamp receipts have totaled $241 million. Begin-

When these ruddy ducks won in 1980, grossing $2 million, John Wilson retired from sign painting.

The striking winner in 1975: Alderson Magee's scratchboard rendering of a family of Canada geese.

Rules changed after James Fisher's canvasback decoy won in 1974; now subject must be living waterfowl.

HECK! I DON'T BELIEVE I LED HIM FAR ENOUGH

ZZ'T ALL RIGHT FOR US TO HUNT HERE?

THEY LOOK LIKE CANVAS BACKS

GET DOWN HE MAY COME THIS WAY!

THERE MUST BE MORE DUCKS UP AT THE OTHER END

SECTION OF THE SKY OVER WHICH THE DUCK PASSED

J.N. DING 10/21-16

ning in 1960 the receipts have been earmarked for acquisition of migratory-bird habitat, which means that together with wetlands-loan appropriations, 3.5 million acres have been protected to date in 311 refuges scattered across 42 states from Maine to Hawaii.

In the beginning, the sole beneficiaries—aside from waterfowl and other wildlife—were hunters, not artists. Artwork was required for the stamps but there was no money to be made and, in fact, there was not even a contest until 1949. The early duck-stamp designers were selected on an "honorary commission" basis—which is to say, without pay. Although the country's top wildlife artists were involved, no one thought of selling prints of their paintings.

While other pioneering duck-stamp artists shared Darling's passion for hunting and conservation, a number of them, unlike Darling, were formally trained artists and accomplished etchers. Such renowned illustrators as Frank W. Benson, Francis Lee Jaques, A. L. Ripley and Richard E. Bishop not only produced original artwork for the stamp; they also inscribed their own plates in order to run off a few prints for friends. Unfortunately, records of those reproductions were handled carelessly and in some cases the original art was lost.

Commercialism did not enter into the picture until a New Yorker named Ed Thomas saw the early prints. Thomas ran the book-and-art department at Abercrombie & Fitch, then the posh Manhattan sporting-goods store. It occurred to Thomas to mount a duck stamp and a signed print in the same frame, then sell a limited edition each year. Nothing quite like it had ever been done before, but when Thomas approached Ding Darling and artists Benson and Bishop, they were all for it. The series caught on in a quiet way. Throughout the 1940s and '50s, a couple of hundred prints were sold annually by a handful of dealers to a select circle of clients. The price started at $15 and later rose to $30. In the 1960s, the print run began to increase, but not until 1969, when the first color paintings were accepted in the contest, did it approach 1,000. That year, 700 of Ed Bierly's Ross' geese sold at $60 each (the rest were given remarques, signed, numbered and sold at $100). He netted about $50,000.

The turning point in volume came a few years later. In 1974, Dave Maass sold 2,700 prints of his first winner, a composition of two wood ducks in flight. "It's been going bananas ever since," says Russell A. Fink, a Virginia wildlife-art dealer. Now it's Maass' turn again and no one would be surprised to see the

The first federal duck stamp, featuring a pair of mallards, was drawn by Jay (Ding) Darling in 1934.

An avid conservationist as well as a hunter, Darling was photographed in a South Dakota field in 1931.

A Darling cartoon, "The Annual Migration of Duck Is On," suggested the plight of waterfowl in 1916.

Maynard Reece won fifth time with cinnamon teal in 1969; prints were hand colored by family members.

Classic hunting scene won contest for Reece in 1958, but nonhunters raised a furor over dead mallard.

enterprising 39-year-old ex-Marine produce more than 20,000 copies of his 1981 painting.

With that kind of money at stake, interest in the contest has burgeoned. In 1976, there were fewer than 300 entries. Last fall, there were more than 2,000—enough to fill two dozen large cardboard cartons.

The duck-stamp explosion has not occurred in a vacuum. The entire wildlife-art field—which includes everything from prints and original paintings to bronze castings and decoy carvings—has been on a tear for more than a decade now. Beyond that, the duck-stamp phenomenon is part of the collecting mania that started back in the early 1950s, when millions of Americans began purchasing antiques and not-so-old oddities (SMITHSONIAN, November 1980). Collectibles ranged from conventional postage stamps and Hummel figurines to more unusual items: barbed wire, beer cans—and duck-stamp prints.

The typical print collector has changed over the years. The "pristine collector" who began buying prints in the 1940s was middle-aged or older, a hunter, an Easterner, more than likely a wealthy professional or businessman, and very low-key. He bought prints because he liked them, with scant thought of return on investment. Today, collectors are younger, less affluent and considerably more interested in the investment aspects of collecting.

Many dealers tout duck-stamp prints as a good investment, and so far they certainly have been. A full set purchased each year since 1934 would have cost a total of about $2,000 and today is worth (depending on its condition) $80,000 to $100,000. It is questionable whether any more than 35 complete sets still exist. Naturally, the rarest old prints are the most valuable. Only 100 copies were made of Frank Benson's 1935 canvasbacks. Last year, they were valued at $6,500 apiece; now they are $7,000.

It remains to be seen how well the more recent mass-produced prints will fare. Theoretically, they should not appreciate nearly as much as the older ones because there are so many more of them. But so far, they have not done badly. Maass' 1974 wood-duck print, which originally sold for $100, is already valued at $1,200 or more.

The most valuable modern prints are distinguished by some special feature—an unusual signature, for example, or a printing irregularity. All 950 of Maynard Reece's cinnamon-teal prints (above) were hand colored by a member of the Reece family and initialed accordingly. That same edition was the last to be produced by old-fashioned stone lithography; each print bears a set of pin holes signifying that it was hand pulled rather than mechanically reproduced.

That kind of attention to detail is pretty much a thing of the past. Today the merchandising and production of winning prints are about as personalized as a mail-order auto-parts business. Most artists and dealers do not see anything wrong with today's big numbers, but some do. "Sell, sell, sell," says dealer Alfred E. King III of New York. "Everyone is hustling prints all over the country, but in the long run the big numbers are going to devalue the product. And yet the prices keep rising!"

Martina R. Norelli, an associate curator of prints and drawings at the Smithsonian, is concerned about the commercialism. "At a time when wildlife artists

Shell Answer Series #30

FIRST AID ON THE ROAD

How you might save the life of an accident victim

by Ed Hawthorne, Shell Safety Manager

Come to Shell for answers

S1

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Traffic accidents kill over 50,000 people each year. Hundreds, perhaps thousands, could be saved by some simple steps.

"If only I could help. If only there was *something* I could do."

When you're waiting at the scene of an accident, hoping to hear the siren of the ambulance in the distance, those are sad, sad words.

In many cases, you *can* help, if you know what to do. That's why we put together this guide. It will show you many ways you can help an injured person until professional help arrives on the scene.

I'll pass along some of the most valuable information I teach in my first aid courses. And I'll introduce you to some people who have actually saved lives with these basic first aid skills.

Study these instructions *now.* There's no time for reading at the scene of an accident. Then keep this guide in your glove compartment so you can refer to the pictures and diagrams if you need them.

Q. An accident. Somebody's hurt! Where do I begin?

A. Remember the "first five of first aid." Later I'll tell more about how to do each one.

1. Get the victim out of danger. If he's safe where he is, try to keep him still.

2. Check for breathing. If the victim is not breathing, tilt the head back and give artificial respiration.

3. Check for bleeding. If you find it, stop it.

4. Check for shock. If you see the signs, take steps to fight it.

5. Have someone call an ambulance (Call 911 or 0).

If you tend to these five tasks, quickly and carefully, you stand a good chance of saving someone from a life-threatening injury.

RESCUE

Q. He's in danger here. How should I move him?

A. When you move an injured person, you risk making the injury worse. It's especially dangerous with back and neck injuries.

But sometimes there's greater risk if you *don't* move him. Maybe

About the Author

Ed Hawthorne grew up in a safety-oriented family. His father is Safety Manager for a large company, and now Ed is Manager of Safety and Industrial Hygiene at Shell's Wilmington Manufacturing Complex. He is a graduate safety engineer and a registered Emergency Medical Technician–Ambulance. Since he joined Shell in 1974, he has spent most of his time in safety training, safety engineering, and routine and emergency medical services. He has also taught courses in first aid, CPR and advanced first aid.

the car is burning or there's a lot of spilled gasoline. Maybe the victim is lying in the road where he could be hit. Then you move him, but cautiously.

The rule is to avoid as much bending and twisting of the neck, body and limbs as possible. For example, if you find the victim lying with legs crossed, move him with legs crossed. Broken bones have sharp edges that can cause internal damage if they move around.

If someone is unconscious in the road, you can *drag* him to safety. Take him by the shoulders (best) (see below) or by the ankles (second best); never pull him sideways.

JANUARY 1980—NEW BEDFORD, MASS. The compact car swerved out of control and plunged into the icy waters of the Acushnet River. Minutes later, when the car was raised, the lifeless body of JoAnne Boudreau fell out.

Every indicator said she was dead, but a bystander, Gerard Soucy, ignored the signs and started mouth-to-mouth resuscitation, forcing out muddy water.

It was hours later, in the hospital, before JoAnne began showing signs of life. The recovery, which took weeks, was complete. Now she is married and lives a normal life.

Because of Gerard Soucy's prompt, effective efforts, he was named "Lifesaver of the Year" by the New Bedford chapter of the American Red Cross.

BREATHING

Q. I don't think he's breathing. What do I do?

A. 1. See if the victim is conscious. Tap him on the shoulder and ask loudly, "Are you okay?"

Lifting an accident victim might make injuries worse. If you have to move him out of the road, it's safer to drag him.

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2. Open the airway. Make sure it's clear. If a person's mouth is injured, his own blood can choke him.

When a victim is unconscious, the tongue can fall back and block the airway. Get the tongue out of the way by tilting the head. Place the heel of one hand on the victim's forehead and tilt the head back. Place the other hand beneath the victim's neck and gently lift.

3. Find out for sure if the victim is breathing or not. Place your ear to the victim's mouth and nose. *Listen* and *feel* for breath. *Look* at the chest to see if it's rising and falling. If he's not breathing, you should now be ready to perform mouth-to-mouth artificial respiration (see below).

Q. How do I give artificial respiration?

A. 1. Open the airway and keep the head tilted as described above. Pinch the nose shut. Seal your mouth around the victim's mouth and blow in four quick, full breaths

AUGUST 1980—SAN FRANCISCO, CA. Russell Lau looked up from his yard work and saw Douglas Mak, the paper boy, pedaling his bike along his daily route. Doug liked Russell so he waved and smiled as he rounded the familiar corner. He never saw the pickup truck parked dead ahead.

Russell saw the truck's tailgate catch the boy squarely in the throat. In seconds, Russell was beside him. Doug's windpipe was crushed and the blood was choking him. Russell turned the boy on his side to help him breathe, applied pressure points to stop the bleeding, covered him to prevent shock, and reassured him until the ambulance arrived.

Today, Doug is hoarse, but he's very much alive thanks to Russell Lau and his Red Cross first aid training.

Someone who has stopped breathing can die in minutes. Serious brain damage can occur even sooner. Start mouth-to-mouth breathing right away. Don't wait.

Pinch the nose shut before starting mouth-to-mouth resuscitation.

in rapid succession. Pull your mouth away to inhale between breaths, but don't hold it away long enough for the air to come back out of the victim's lungs.

2. Check to see if the victim begins breathing on his own.

3. If the victim does *not* start breathing, keep giving artificial respiration, one big breath every five seconds. Watch the victim's chest fall between breaths.

If the victim *does* start breathing, keep the airway open and keep checking. He might stop breathing again.

BLEEDING

Q. How can I stop that bleeding?

A. Direct pressure is best. Press the *entire* area of the open wound with the palm of your hand on some kind of a clean dressing like a thick pad of cloth. The cloth between the hand and the wound will help control the bleeding by absorbing blood and allowing it to clot. Continue direct pressure until the bleeding *completely* stops, or until the ambulance attendants take over.

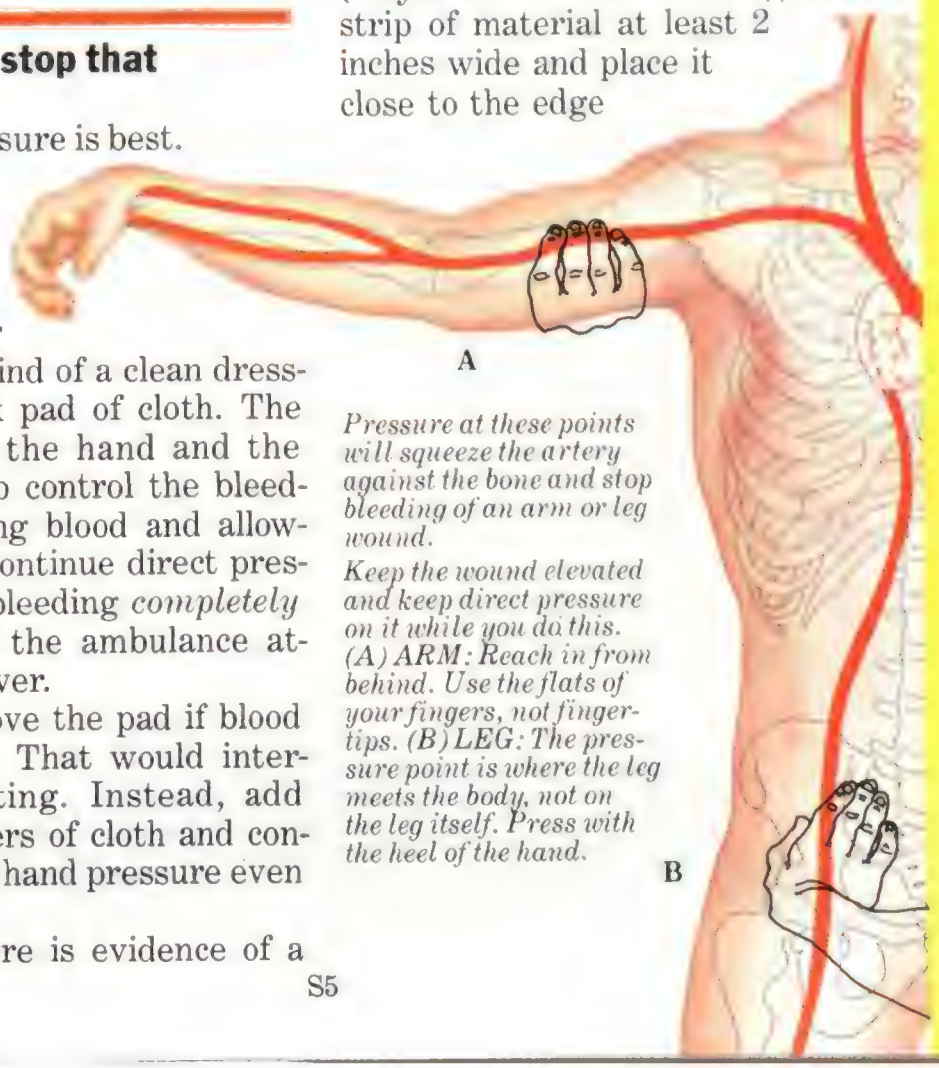
Don't remove the pad if blood soaks through. That would interfere with clotting. Instead, add more thick layers of cloth and continue the direct hand pressure even more firmly.

Unless there is evidence of a broken bone, try to position the victim so the wound is elevated higher than the heart. This uses gravity to reduce blood pressure at the wound and slow the blood loss. But keep the hand pressure on.

If direct pressure and elevation won't stop severe bleeding of an arm or leg wound, try the pressure point technique—shown in the drawing below. *Keep the direct pressure on, too.*

Don't use a tourniquet unless the bleeding can't be controlled by any other means. A tourniquet cuts off all of the blood flow and *can mean the loss of a limb.*

If you *must* use a tourniquet (maybe a limb was severed), use a strip of material at least 2 inches wide and place it close to the edge



A

B

Pressure at these points will squeeze the artery against the bone and stop bleeding of an arm or leg wound.

Keep the wound elevated and keep direct pressure on it while you do this. (A) ARM: Reach in from behind. Use the flats of your fingers, not fingertips. (B) LEG: The pressure point is where the leg meets the body, not on the leg itself. Press with the heel of the hand.

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of the wound. Don't use anything narrow that could cut the skin. Then make note of the time you apply the tourniquet, and tell the ambulance attendants or doctor.

SHOCK

Q. How do I check for shock?

A. Any serious injury can throw somebody into shock. And shock can kill even when the injury itself isn't all that bad.

When somebody goes into shock, several critical body functions, including blood circulation, slow down. Look for these signs:

—Skin may be pale or bluish. Or it might be blotchy. On dark-skinned victims, check the fingernails and inside the mouth.

—Pulse will usually be quite rapid, but weak.

—Skin may feel cool and clammy.

—Breathing is fast. Breaths may be shallow, labored or irregular.

—Victim may be restless, anxious, thrashing about, complaining of severe thirst or nausea.

—Victim might have a vacant expression and an offhand, "so what" attitude.

MAY 1979—SHREVEPORT, LA. There was no traffic to speak of. Just the two of them—a garbage dumpster poking along in the right lane and Jimmy Peacock coming up behind him in the left.

Without signal or warning, the dumpster turned left, directly into Jimmy's path. Jim hit the brakes. The car nosed under the truck, then stopped. But Jim kept going, right into the windshield.

Roger Thomas (left) didn't see the accident. When he drove up, he saw a bloody figure stumble across the grassy median, then collapse. Roger grabbed his first aid kit and rushed to his side.

There was a severe cut between Jimmy's eyes. He was losing blood fast. Roger grabbed a gauze pad, applied direct pressure, held it tight, and reassured Jimmy until the ambulance came.

Jimmy lost part of his eyebrow, but he didn't lose his life thanks to Roger Thomas and his Red Cross first aid skills.

—Pupils of the eyes may be open wide (dilated).

You don't have to see *all* of these signs. When you see some, assume you've got a case of shock on your hands.

Placing an unconscious victim on his side prevents choking by allowing any fluids to drain from the mouth.

Q. How do I fight shock?

A. Take these steps to improve circulation and oxygen supply.

Get the victim to lie down. That's good for circulation. *But don't move him if you suspect a neck or spine injury.*

Wrap him up enough to conserve body heat. You don't want to warm him up, just keep him from cooling off. Don't forget blankets *underneath*, too.

If the victim is unconscious and there are no serious injuries, put him on his side (see opposite page) so any blood or fluids can drain from the mouth. Take extreme care to keep the airway open.

DON'T give fluids.

If the person is conscious and there are no serious leg, abdominal or chest injuries, put him on his back with his feet slightly raised. If you're in doubt about the injuries, keep him flat.

Q. Is this all I need to know?

A. Not by a long shot.

This much knowledge is better than no knowledge at all, but it only scratches the surface. If you really want to come through in an emergency, do what I did, get some real training.

The basic level Red Cross First Aid Course only takes a few hours. Another good quick course to take is CPR—Cardiopulmonary Resuscitation—to learn how to help someone whose heart has stopped. These courses are inexpensive and the skills you learn are priceless.

The First Aid Kit

A few inexpensive items packed in your car could help you take care of a wide variety of emergencies.

Gauze dressings 4″ x 4″: for cuts, burns, and lacerations.

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For more complete information than we can put in this guide, get *First Aid and Personal Safety* by the American Red Cross. It costs less than four dollars.

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are seeking greater critical recognition," she says, "all of the hype over the duck-stamp prints reflects poorly on the entire field. The aim is not art; it's money."

Not surprisingly, the most controversial aspect of the contest seems to be the judging. Even though the number of entries has quadrupled in recent years, the judging is still crammed into one hectic day. And the credentials of the panelists have come under fire from dealers, collectors and artists alike. "The judging has been atrocious," fumes one prominent East Coast dealer. "Here you've got millions of dollars at stake and people who don't know anything about art are making the decisions. Some of the winning designs have been all right, but some have been terrible." Many dealers would like to see fewer wildlife professionals on the selection panel and more knowledgeable art critics, collectors and artists. They would also like to give the judges more time.

Whatever the contest's shortcomings, the duck stamp has been a smashing success judging by the number of its imitators. Nearly two dozen states now operate wildlife-stamp programs of their own to finance various conservation projects, and they have proved lucrative enough, in terms of print sales, to attract many of the same nationally known artists who enter the federal contest.

It is hard to say what Ding Darling, who died 20 years ago, might think about all this. As long as wildlife continues to benefit, he would no doubt approve. But as a stickler for accuracy, he would not be amused at some of the artistic lapses and idiosyncracies that are encountered by contest judges each year. One artist painted a bird with a regular wing and a skeleton wing. Another showed a hunter in a blind with a goose standing on his head.

Even some of the winning designs have contained potentially embarrassing errors. In one, several ducklings were painted without any wings, which had to be added later. Two other winners apparently were based on photographs of captive geese because each of the painted birds had the tip of one wing clipped. Worse, there was corn on the ground in one of those pictures. "Good Lord, it would have been a disaster if we had not caught that one," Bob Hines recalls with a shudder. "Imagine Uncle Sam's official duck stamp showing live decoys standing over bait. That's one of the worst offenses a waterfowl hunter can commit!" Surely Ding would not have liked that at all.

On an island in Arctic Ocean, Maynard Reece prepares a sketch of waterfowl for a future painting.

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"Morning Breakfast," Ragamuffins' Parade, Brooklyn

Skaters at Sikh festival in Venice, California

Photographs by Patrick Ward

From Britain, with love

On exhibit at the World's Fair in Knoxville, Tennessee, are an English photographer's amusing impressions of Americans at play

Before he left home for the wilds of America, photographer Patrick Ward had read *Mort's Guide to Festivals, Feasts, Fairs and Fiestas,* and concluded that "America had as many nutty, eccentric and charming events taking place throughout the year as we do here in Britain." Armed with a fellowship, a camera and his own peculiar eye for humor, Ward arrived in this country in June 1980 to spend a year photographing what he conceived to be "American Insanities." His pictures, which may be seen now in the U.K. Pavilion at the World's Fair, attest that he found what he was looking for. His notes reveal that, along the way, he fell in love with us:

"It's July the 4th in the small desert town of Eureka, Nevada. Main Street has been closed off to vehicles by the simple device of parking the Sheriff's car across one end and his Deputy's across the other, and the town's 800 or so citizens are out celebrating. The three-legged races are followed by the sack races, and then, for the grown-up children, the nail-hammering and

ladies' beer-drinking competitions. Perhaps it's the sight of this latter drama that persuades a group of Hell's Angels, who've managed to ease into town past the vigilant Sheriff, that life might be just a little safer out in the desert. It's an America that a thousand eagerly watched movies have still not quite prepared me for.

"In the following months I was to cross the country several times. After driving some 35,000 miles in eight months, I consider myself just downright lucky to have survived. Having Arizona plates did seem to be of some advantage, especially in the Eastern states. In Manhattan, even cab drivers steered well clear of me, and I can still remember the look of bafflement on the face of a New York pedestrian who, on seeing my plates, shouted to me, 'You're a long way from home, buddy!' and got the impossible-to-resist answer, 'Actually, that's quite true, old chap.'

"During this period I photographed some 60 events, ranging from one-day happenings such as the Lesbian-Gay Freedom Day Parade in San Francisco and the Easter-Egg Roll at the White House to lengthier gatherings like the Days of '47 in Salt Lake City and the '49ers 'encampment' in Death Valley. This 'gray-haired teen-ager' got hooked on roller skating in Venice, California—the one place where all good skates have to go before they die [SMITHSONIAN, March 1980].

"In all, I shot some 450 rolls of film, which eventually produced 70 photographs that I like, and that express my affectionate feelings for America and Americans. My journey also gave me something much deeper, the sense of enjoying a second nationality. I now think of America very much as my second, perhaps even my first, spiritual home. If England was the country to which I was given birthright, then America is the country I have embraced by choice."

Limbering up for marathon in Phoenix

Weary clowns at Basque festival in Elko, Nevada

Primping for a dog show in Phoenix

"Skid Row" Santas in Manhattan

Losers at a rooster-crowing contest in Rogue River, Oregon

"Village Maidens" on May Day in Manhattan's Central Park

Ladies of the Azalea Trail at a parade in Mobile

Golden-age cheerleaders in Sun City, Arizona

Snow golfer at Winter Carnival in Stowe, Vermont

Collegians at Vassar Founder's Day, Poughkeepsie

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The Cognac of Napoleon

Gaertnera longifolia, blooming in tiny natural forest, is one of only four adult specimens in the world.

Rempart Mountain, fragment of an eroded volcanic crater, reflects birth of island in ancient eruption.

By Alison Jolly

Island of the dodo is down to its last few native species

On Mauritius, in the Indian Ocean, all of the original flora and fauna are now losing out to aggressive invaders

"Keeeeeestrel!" shrilled Carl Jones.

A small brown bird plummeted past our heads, down into the void before us. The soft feathers of its breast were punctuated with heart-shaped black spots. Sunlight gleamed through the outstretched feathers of wings and tail. Its short, rounded wings and long tail marked it as a forest hunter equipped to brake and steer among the branches, unlike most other kestrels in the world. A green day-gecko dangled from its talons as it flew toward its nest in the cliff face below our vantage point, 500 feet above the Black River of the island of Mauritius.

Carl Jones, who directs the Mauritius project of the International Council for Bird Preservation, focused his telescope on the nest hole—one of only two known nests last year, for a world population of perhaps 15 Mauritius kestrels (p. 96).

Mauritius is the home of disappearing species. The dodo (p. 98) was last seen alive there in 1681; it was the first species whose extinction was widely realized to be caused by Man. (We now celebrate the 300th anniversary of the dodo's demise.) Of 33 species of

A male echo parakeet suns in Macabé Forest. There are only five of these birds in the world, all here.

Mauritius' indigenous birds, two-thirds have become extinct since Man colonized the island more than three centuries ago. Eleven remain, precariously. The kestrel is not the rarest: just five echo parakeets (above) now fly like emerald fire over the gorges; wild pink pigeons (p. 98), plumping up their feathers like rosy sofa pillows when the sun clears mists from their mountain roost, may have dropped below ten in number after the cyclone of Christmas Eve, 1979. As Jones points out, if a bird species in Europe or North America falls below a thousand members, hundreds of conservationists rally to its support. On Mauritius, people say that birds like the fody, a little weaver finch whose males seem to have fallen head and shoulders into a pot of scarlet paint, are doing well because there are probably 40 pairs. Furthermore, indigenous plants, reptiles and insects are as endangered as the birds.

Mauritius raises questions for the naturalist far beyond the danger to this species or that. It raises the central question of what success means in evolution. The native birds and plants of Mauritius are steadily losing ground because they cannot compete with introduced species in altered habitats. Myna birds from India take the echo parakeets' nest holes. Seedlings of Brazilian purple guava and oriental privet crowd out the rare seedlings of the endemic trees. Javan pigs and monkeys help spread new mammal-forest and destroy the ancient bird-forest.

The aggressive colonists are in a sense absolutely better adapted than the native island forms. They find a first foothold in disturbed environments where men have cut the original forest. Then they spread, inhabiting more and more of the original forest. These new species, which evolved in the intense competition of the continents, squeeze out gentler forms of Mauritian life even on their own ground. Mauritius is the place for the biologist who wants to study success, as long as he does not mind watching the failures go extinct.

Mauritius faces us with a question of action. What do we do about the situation here, and in the hundreds of other islands where introduced species are taking over? Should we write off island species as past saving, a waste of conservation time and money? In the so-called real world of economics, we have to set

Mauritius kestrel perches on a black ebony; there are only about 15 of the birds left in the wild.

priorities, and our priorities must be areas like the Amazon or Central Borneo where robust ecosystems still survive.

And yet, I challenge you to stand on that cliff top by the Black River gorges, and watch the kestrel dive, and then say, "Give it up, bird, because we have given up on you." The female emerged from the nest hole, screeching her begging call. She perched on a bush rooted in a cranny in the cliff side, accepted the gecko from her mate, and dived back into the hole to feed it to their young. No one has convinced this kestrel that her urge to live and reproduce is hopeless.

My mission is not to plead for a reversal of priorities. Rather it is to plead for still more effort so that we can save more than what is important for human needs, with enough left over for sentiment. It is, mainly, an attempt to understand how island wildlife has reached the stage where only sentiment can save it. This is a war correspondent's report of a lost battle.

Mauritius was born in volcanic eruption from the Indian Ocean some eight million years ago when our ancestors were still apelike, far from human. It has no near neighbors except four tiny islets to the north, fumaroles or debris of volcanoes on Mauritius. Rodrigues, whose age is disputed, lies 350 miles to the east. Réunion, perhaps half Mauritius' age, is 100 miles to the west. Réunion's still-active volcano, Piton de la Fournaise (the "Furnace"), erupted in February-May 1981. Réunion is still growing, while Mauritius weathers into fantastic scallops and gorges. These three are the Mascarene Islands, thrown up at the junction of north-south undersea ridges and a deep east-west fracture zone.

Rare natives, behind barbed wire

Wahab Owadally, conservator of forests on Mauritius, looked back over his shoulder with a contagious grin. He opened a gate in a barbed-wire fence and waved a hand, saying, "We keep this well camouflaged!" Behind the barbed wire we saw only unkempt privet and guava hedge, the familiar invading weeds. Then I noticed the crowns of manglier rouge (*Sideroxylon puberulum*) peering over the privet like heads of giraffes in a zoo cage. I do not write the reserve's name because it is kept, as much as possible, secret from casual visitors. If you are privileged to step inside, there is a real Mauritian forest, a tangle of undergrowth and bushes and trees and epiphytes, with filmy ferns and orchids that sprout from angles and crotches. There are only four adult *Gaertnera longifolia* (p. 94) plants in the world, all here, side by side in this reserve, flowering for a few days each summer. Fortunately, one or two seedlings are growing.

"You see," Owadally explained, "the Forest Service

Psilotum nudum has fossil relatives going back some 350 million years.

Polystachya, a miniature orchid, is among the more abundant natives.

Shrimp orchid, *Cryptopus elatus*, is emblem of the local orchid society.

set this reserve aside because of its unique richness. More than 40 years ago our magnificent botanists, Dr. R. E. Vaughan and P. O. Wiehe, recognized that this area represents a typical stage in development. It is a transition between heath and upland climax forest. As a result, we have saved this tiny relict while all the surrounding forest was cleared for agriculture. Now I keep two gardeners here full time. Actually, they are both elderly men who recognize the indigenous plants. The job is not too demanding for them. They weed out all foreign seedlings, especially the three major pests: guava, privet and the foresters' nightmare, a raspberrylike bramble called piquant loulou, which makes thickets 12 feet high. You see, unless we weed we will lose the native species. The reserve is only one and a half hectares [3.7 acres]. This is absolutely all I can save this way within the government budget. Even now, one entrepreneur has asked the government for this land, claiming it would give more economic return as a pig farm."

R. E. Vaughan celebrated his 85th year (many of those years spent studying Mauritian flora) by drawing up a census of that little reserve. Although he stressed that the census is not fully complete, he has listed 83 species of woody plants and lianas, of which 26 are endemic to Mauritius, and 39 more are found only in the Mascarene Islands and to the north in the Seychelles. A further six live as far away as Madagascar, which leaves just 12 that you can see without traveling to the Indian Ocean. All this without mentioning the two endemic species of the stilt-rooted *Pandanus* and the sedges, orchids and ferns. At least 230 plant species grow in that tiny natural forest.

For comparison, visit the Royal Botanical Gardens of Pamplemousses on Mauritius, founded in 1768 and rightly one of the most famous botanic gardens of the world. Adults gasp today at the swollen African baobab; children catch introduced South African toads and send them hopping onto the giant pads of the Amazon water lilies. According to Wahab Owadally's guidebook, Pamplemousses can boast 500 woody plant species in its 25 hectares, of which 25 are indigenous to the Mascarene Islands, including lovely avenues of planted palms. However, *no* plants endemic to Mauritius alone survive in the Royal Botanical Gardens.

Such is the economy of species-packing in nature that Pamplemousses has 17 times the area of the tiny reserve, but only five times as many woody plants, and no purely Mauritian species. Surely Mauritius could boast as proudly of the natural botanic garden as the artificial one, even if the transition forest reserve will have to be weeded, just like Pamplemousses, for whatever time it is going to survive.

The late sun illuminated the canopy of manglier rouge, with its seedlings and leaves of red rust below, deep green above. We flitted from orchid to orchid,

Alison Jolly, a primatologist working at Rockefeller University, is author of A World Like Our Own, *on animal ecology and human needs in Madagascar.*

Sugarcane is major crop where lowland forest once sheltered dodos; Man destroyed both bird and forest.

Pink pigeon, saved by breeding programs, has a better chance of surviving now in aviaries than in the wild.

Flightless dodo, extinct since 1680s, had no natural predators until Europeans visited island.

and paused to admire the *Psilotum nudum* (p. 97), a modern representative of the oldest order of terrestrial plants, whose fossils date back 350 million years. Owadally showed us ebonies, male growing by cauliflorous female, as though for each other's company. Three of Mauritius' rare endemic ebonies grow in this reserve. The one Owadally most proudly shows us is a newly described species, with the name of the place's patron, *Diospyros revaughanii*.

Transitional forest would ordinarily grow up into "climax" forest, the stable equilibrium where no further change will occur. If you emerge from that small reserve and look for either upland or lowland climax forest, you become aware of the next catastrophic change in Mauritius' biological history.

Four hundred years ago, the low-lying plains were filled with tall forests. Sunlight filtered through to the leaf-littered floor or carpet of ferns. Black, white and red-barked ebonies grew among the bois d'olive (*Elaeodendron orientale*), a tall tree with a twisted, multiple trunk like an olive, which confuses botanists by being so different in mountain and lowlands that it may be considered two species, and by having linear leaves as a young tree so only the knowing would guess it is the same as the oval-leafed adult.

Bats were the only mammals

No mammals walked through those woodlands. Four kinds of bats were the only mammals to reach Mauritius before Man (one, a fruit bat, is now extinct). Instead, picture a dodo waddling sedately beneath the trees, or laying its single egg in a nest of leaf litter. You can picture other birds just as strange—a blue and red pigeon, a large flightless parrot.

As early as the Middle Ages, Arab sailors put in to water on this island paradise, and Spanish and Portuguese arrived throughout the 1500s. They did not stay, but they herded the trusting dodos toward their ships for slaughter. (As Darwin noted three centuries later, it seems very difficult to teach fear to an animal that has evolved without predators.) Far more devastating, the Portuguese released pigs for food, and pet crab-eating macaques and cats. Black rats and mice escaped from their ships. These were Mauritius' early mammals—resourceful omnivores that ate everything from ebony fruit to dodo eggs. These were the Robinson Crusoes who really prospered.

Then the Dutch settled. They were sent to extract ebony. Their logging outpost lasted from 1638 to 1710, until there was no more exploitable ebony in the lowland forests. The Dutch sailed away to the Cape of Good Hope, leaving Mauritius to the French, who settled in 1715 and finished destroying the lowland forest to make way for agriculture. Today almost 95 percent of the lowlands are covered with sugarcane.

Nowadays, in the few lowland areas unsuitable for sugarcane, there is a new kind of lowland forest, full of different life, most of it brought to Mauritius by Man. Here, crab-eating macaques that are native to Southeast Asia are eating tamarind and mangoes from India, acacias from Africa and man-made hybrid sugarcane. They may suffer (in fact, there seem to be some monkeys with diabetes) but they have adapted to an environment that never before existed in this form.

The same is true for all the other invaders. The raucous myna birds eat fruit like parrots, and ride on the backs of the three-tined rusa deer like oxpeckers. The deer, from Java, are farmed for hunting in native forests and bushlands. They will be shot, as part of a traditional hunt prior to Franco-Mauritian luncheons, with plenty of champagne in the hampers.

It was a shock for me, used to thinking of Madagascar's fauna as threatened and vulnerable, to find that many of the invaders came from Madagascar—the traveler's "palm" with its nobly spreading leaves, or the impudent scarlet bird, Madagascar fody. These, though, are species that still have large populations in Madagascar itself, for they are the ones that can live in disturbed habitats and do not need an environment of closed, stable forest.

The successful invaders, almost all brought to Mauritius as cage birds, have much in common, whatever their home continents. Most are successful everywhere. The spotted turtledove began in Southeast Asia, and is now ensconced in New Zealand, Hawaii and Los Angeles, as well as here. The red-whiskered bulbul does not just threaten the Mauritius olivaceous bulbul, of which several hundred pairs survive; you can also see red-whiskered bulbul as an exotic species in Hawaii and Florida. The introduced ring-necked parakeet from Southeast Asia is edging out the echo parakeet (the ring-necked parakeet thrives as well in England and North America).

As monkeys go, so goes the forest

Furthermore, the invaders help each other spread. The original forest evolved with few seed predators, at least no mammalian ones. The new trees come from Asia or Africa, where there have always been monkeys. The large, unwieldy seed of a mango is made for a monkey's hand, to be dropped a little farther on. Tamarind seeds with their laxative coating go straight through. Where the monkeys go, monkey forest goes with them, but when Carl Jones found the crab-eaters feeding in an ancient ebony tree, they chewed up seeds and all.

If Mauritius were isolated in future centuries, little by little these wide-ranging invaders might specialize,

Mauritian fruit bat clings to cage in Forest Service aviary; bats were only mammal on island before Man.

settle down, evolve closed forests and finely divided ecosystems of their own. Studies on Solomon Islands ants and the birds of New Guinea and the Caribbean show that in the past newly formed islands have been invaded by generalist species; then, over centuries, the generalists have been replaced or sometimes evolved into forms that specialize into narrower and narrower niches. Occasionally a new species successfully invades a mature ecosystem, but in time it, too, takes its part in the finely knit community of specialists, though it may drive some older forms into extinction before it does so. Islands today provide much of the creative inspiration for understanding evolution, just as the Galápagos Islands did for Darwin.

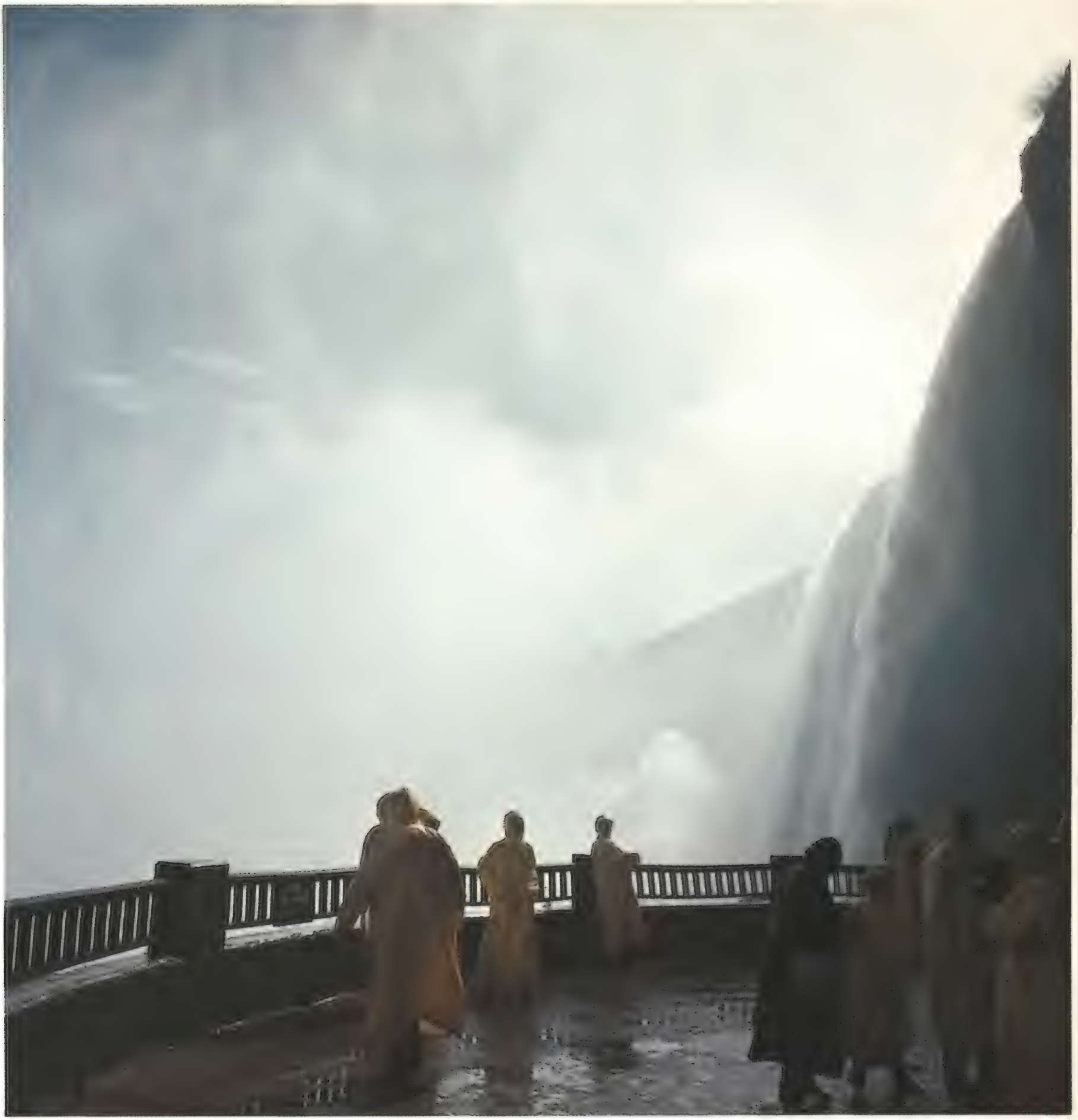
Unfortunately, the rate of evolution of new species on islands is far outstripped by the rate at which forms are becoming extinct. We are losing not just the remaining 11 Mauritian birds, but every other island species elsewhere that cannot stand up to mynas and ring-necked parakeets, crab-eating monkeys and ship rats. However interesting these settlers, do we really want to meet them wherever we go?

Saving the pink pigeon

The ancient forms can be saved only by human care. Carl Jones breeds pink pigeons in the Black River Aviaries—four years ago, eight young survived to maturity, 12 two years ago and 17 last year. In conjunction with Gerald Durrell's breeding program at the Jersey Wildlife Preservation Trust in the Channel Islands and the New York Zoological Society, the pink pigeon may be saved.

"My biggest headache is being marriage broker," Jones explains. "Pigeons are monogamous. Every year I arrange them beautiful mates, with all the genes right and so on, and then they go and fall in love with someone totally different. . . . But look! Here is the youngest pink pigeon in the world!" He cuddles the appalling little squab, its dirty white down failing to mask its raw, red skin. "Isn't it nice?" he asks. "Isn't it nice?" The gawky creature shows no sign that it will grow into a chocolate-box bird with warm russet back and sunrise-colored breast, spotlighted in the admiration of ornithologists. It flops its neck, and Carl puts the bird back under the foster-parent dove that hatched it. The youngest pink pigeon in the world has far more chance of surviving in the aviary than in its ancestral home.

As with the birds, so the trees. Wahab Owadally took us to the Macabé forest, mountain forest that is still counted as wild land. Many parts of it are like a graveyard, for the white skeletons of the ancient forest stand bare, cyclone-killed, among a new growth of invading privet and guava and brambles. One of the



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native trees is the tambalocoque, sometimes called the dodo-tree, because one theory says that its seeds germinate only when passed through a dodo. Fortunately, a few seeds can be induced to germinate without the dodo, and Owadally's foresters have set out a little plot of young tambalocoque. It, like the pink pigeons, must be tended. A tambalocoque or a Mauritian ebony may grow for a thousand years. The seedlings add an inch or so, while privet and guava measure their growth in feet. Does anyone want to take on a job of weeding for the next thousand years?

And then, over the Macabé forest flashed a gleam of green. Carl swung his telescope toward the parakeet's landing tree, shouting: "There's another!" Then, in a softer voice: "No, there are three," and then he whispered: "Four echo parakeets on the same branch." At last, almost voiceless with emotion: "You can look if you like. Four on a branch and one below. That is the world population of echo parakeets on one tree."

The parakeets eat only the fruit of Mauritian trees. The kestrels hunt only in Mauritian mountain forest. The remaining wild pink pigeons browse and eat fruit more widely, but compete with monkeys and mynas for food. The native birds and their forest formed an ecological community, but they do so no longer. Are they worth the effort to save them, as we save Egypt's papyruses and Greece's statues, now that their empires are gone?

The saddest creature I saw on Mauritius was a palm tree, *Hyophorbe amaricaulis* (left). It grows in Curepipe Botanical Garden because it happened to be there when the garden was made. It is not a particularly distinguished palm, it is not useful for any known human need, but it is the last of the species and an old tree, too, which R. E. Vaughan says has hardly grown taller in 40 years. Every year it bears both male and female flowers on the same stalk. They ripen at different times, a device to avoid self-pollination. It bears sterile fruit. In spite of Dr. Vaughan's attempts, the seeds do not germinate.

You say, why cannot someone shin up the tree, collect pollen, put it in the refrigerator, then at least try to produce viable seed? Why not try cloning, however difficult? Why not at least make it the symbol and warning of the fate of all other Mauritian species? In a developing country with all the needs of any country, in a busy forestry department that must produce fuel wood and building timber, as well as guard and weed its native forests, few will have time to mourn that palm. We haven't got enough sentiment to spare.

Mauritian palm makes a solitary stand in botanic garden at Curepipe; it is last one of its species.

Young pink pigeon was reared by Carl Jones, who has taken on the role of birds' "marriage broker."

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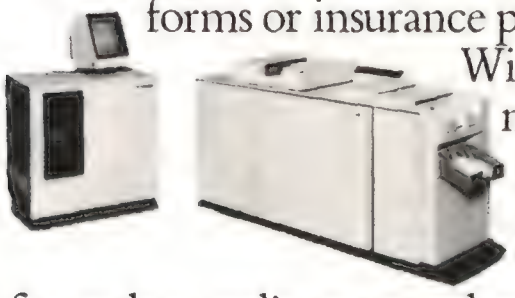

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By Frank Getlein

The flowering of New England culture was off to an early start

Shoe, 10⅝ inches long, was worn by Sarah Leverett, who married John Leverett, future Governor of Massachusetts, in 1645.

By decree, right to wear hat like this was reserved for those who owned property worth at least £200.

An encompassing exhibition of Colonial life and art as they were in 17th century shows that the frontier was remarkably cultivated

From now until late August, the sign outside the Museum of Fine Arts, Boston, reads, "New England Begins," to which the casual passerby, even if himself a Yankee, may respond, "High time, too," or more fundamentally, "With baked beans and brown bread."

The Museum itself fills out its declaration with a chronological translation, "The Seventeenth Century," which in turn one might define for these purposes as 1620 to 1700, a short century as centuries go, but all the New Englanders had of the 17th, that first date being the year, as every schoolchild should know, the Pilgrim Fathers and Mothers dropped anchor and set foot upon Plymouth Rock.

To this day we commemorate that colony with the celebration of Thanksgiving, despite futile efforts of the Virginians to push the claim that their own forebears were feasting and giving thanks to God for sheer survival at Jamestown years before the Pilgrims set sail. Those Virginians may indeed have been doing so —they would have been hard cases if they hadn't been grateful for staying alive against the odds they faced. But thanks to Henry Wadsworth Longfellow, to Felicia Hemans, who, from across the Atlantic in Great Britain, single-handedly endowed flat, sandy-beached Plymouth with its stern and rockbound coast —no mean feat—and to numerous other mythmakers, not only is Thanksgiving a New England feast that has proved movable to all other parts of the country, but New England itself has been a movable feast, through the spread of its peculiarly American virtues and limitations. Like most combinations of myth and reality, it needs a little sorting out, and that is precisely what "New England Begins" is out to do.

Specifically, "New England Begins" is out to explode "the myth of the colonists as a deprived frontier people by demonstrating the continuity of their New World culture with their Old World experience."

That is a large order and largely does the exhibition tackle it—and with success in every field it enters, which includes just about all relevant ones. There are 500 objects owned by the museum or borrowed from institutional or individual lenders on both sides of the Atlantic, which mere number makes the show the

Colonial New England flowered early on

Colonists came with treasures, including the silver Winthrop Cup, London-made and almost a foot high.

largest ever assembled in the field. Categories of work on view include chests, chairs, tables and bedsteads; paintings (all portraits) and prints; pewter and silver; textiles of several kinds; ceramics and glass; maps, some of them beguiling in their tenuous relationship to the geography involved, and books in profusion.

The show also has a section on the Indians the Pilgrims met in Plymouth and just about everybody else met everywhere else they landed or happened to journey to in New England. The New Englanders were fighting the Indians on and off long before the Colonies had to cope with French and Indian wars. But it is also true that these New Englanders generally started out with less actively hostile intentions and the desire to bestow upon the Indians what the new arrivals deeply believed was their greatest gift—their abiding religious faith—and what they deemed a "civilized" life-style. (In a radical vein for the time, and from a somewhat different perspective, Rhode Islander Roger Williams questioned the Crown's right to grant, without paying for it, land that clearly belonged to the Indians.)

The newcomers meet the earlier comers

The point for the purposes of "New England Begins" is that the two races had profound effects on each other—leaving aside the inherent irony of such a statement in the light of the wars. The immigrants learned much from the native inhabitants. The myths tell us that in the attractive story of the Indians teaching the newcomers about corn cultivation.

The show details that two-way process of learning in a very instructive set of exhibits of Indian culture, with emphasis on the adaptation of parts of it by the New Englanders. It also sets forth the Indian culture as affected by the newcomers in such things as the proliferation of glass beads as ornaments more attractive than shells and berries, and juxtapositions of the kinds of Indian artifacts made before the landings, with castings in brass and pewter made after exposure to Old World methods and metals (opposite).

Besides being an endlessly fascinating show, it is also extensive in the form of demonstrations of things that the settlers did and made. The visitor can see "Puritans" spinning, weaving, painting portraits, turning and joining wood, cooking, and making pottery. Music both sacred and profane is performed on instruments of the time and, when appropriate, accompanied by period dances. Several bus tours will leave from the museum for surviving historic houses, and housing also provides what may be the most ambitious single exhibit in the show: the construction and display of the Fairbanks House—an exact facsimile, in materials and methods as well as in design,

Colonists taught Indians to cast brass, as in comb.

The detailed stone scrollwork and elegant carving and design distinguish a headstone dated April 1681.

of the oldest surviving timber framed house in North America; the original stands in nearby Dedham and that, too, may be visited. Visitors to "New England Begins" as it began—during the first week of May—saw the museum's house built from the ground, with carpenters using the traditional 17th-century tools.

The point of all this activity is not to create a Williamsburg North but to reveal in rich detail the actual life of those Pilgrim Fathers we celebrate in song, to show that life in the materials of it that survive, and to link that material existence to the spiritual and intellectual existence that all Americans know about, however vaguely. In the words of Jonathan L. Fairbanks, the museum's curator of decorative arts, chief architect of the exhibition and descendant of those original Fairbankses: "A culture can be understood by viewing its intellectual and material achievements as an indissoluble unity. It is misleading, in other words, to separate the concepts unifying a people from the context in which they arose." This seems unexceptional enough, yet there have been cultures whose intellectual achievements have been so immense, so towering that certain material accompaniments to those achievements are popularly misunderstood.

Two cultures spring to mind: Athens and New England. Athens created the intellectual basis of Europe,

Author, critic, radio and television commentator, Frank Getlein wrote on the life and art of Sir Edwin Landseer in November 1981 SMITHSONIAN.

Colonial New England flowered early on

and we visualize Athens as Socrates and Plato strolling about in white bed sheets in a city made mostly of marble with white statues decorating white buildings, realistically blinding in the Greek sunlight, but in our mind's eye simply pallid. New England has a legitimate claim to bearing something of the same intellectual relationship to the United States as Athens did to Europe, and something of the same "pallidization" of New England has taken place in our minds about early New England. The outstanding visual difference between those two false mental images is that the Athenian white has been muted still more for New England into dull browns, grays and blacks, relieved, when it is relieved, only by the white of starched stocks for the men, caps for the women. The picture is indeed false and the exhibition easily and plentifully so demonstrates.

The intellectual achievement of New England was and continues to be momentous. It began well before the founding of Harvard College in 1636, but Harvard, Yale, Dartmouth, Brown and the rest consolidated and expanded that achievement, building it into New England's emerging regional character and giving it the institutions needed to lengthen the shadows of any individual or group. A description of the founding of Harvard, carved on the wall by the Yard's Johnston Gates, sets out quite distinctly the double purpose of such a school: "After God had carried us safe to *New England*, and wee had builded our houses, provided necessaries for our liveli-hood, rear'd convenient places for Gods worship and setled the Civill Government; One of the next things we longed for, and looked after was to advance *Learning* and perpetuate it to Posterity; dreading to leave an illiterate Ministery to the Churches, when our present Ministers shall lie in the Dust."

That clearly makes Harvard a training ground for clergymen, which in part it was, but the advancement and perpetuation of *Learning*, with whatever motive, brings with it, as well, its own motive and its own power. That happened, at Harvard and elsewhere, during the period covered in the exhibition.

Other things happened, too. As people moved out from Plymouth and Boston up and down the coast, west into the forest and fields, even across the water to the islands, including Long Island, some of them moved for religious reasons, in dissent from the Dissenters, as it were. Rhode Island was founded in great part from such motivation. During the Indian strife in midcentury a New England Confederation came into being chiefly for mutual defense, but clearly requiring mutual toleration on a number of matters. In some ways, against their will, the Massachusetts settlers even found themselves acknowledging religious diversity, which had been no part of the intention of the pioneer voyagers on the *Mayflower* or any other ship.

Toward the end of the 17th century, when the colonists were weakened by their finally victorious but fiercely devastating war against King Philip, the last great New England Indian chief, a renewed and reenthroned English royalty established its sway over uppity New England, and with it introduced the Anglican Church that so many of the voyagers had voyaged here to get away from.

Perennial flowering of New England

Out of that religious and political background came the literary achievement, the "flowering of New England," a process that continued much longer than was postulated in the invention of that phrase, and that blooms even today in novelists John Updike and John Cheever, to name but two. A permanent feature, apparently, of New England literature has been the negative criticism of the region that runs at least from Hawthorne to Marquand and can be found, more delicately, in both Updike and Cheever. This is not really a matter of authors biting the hand that fed them; it is rather one of authors given the intellectual processes made habitual in New England and applying them to what was at hand. One might also see in that phenomenon yet a further development of the self-accusation that was a basic part of the Puritans' endless keeping of accounts—both individual and communal—with God.

It is interesting once more to see in the exhibition that primal publication of the New England literary life, *The Whole Booke of Psalmes*, better known as the "Bay Psalm Book." The group of Massachusetts ministers who worked on the book maintained (falsely, according to the evidence) that their translation was directly from Hebrew to English, with no mediating

Salt-glazed stoneware jug, from Germany, dated about 1689-1700, accompanied immigrants to new land.

Boston couch, one of the two surviving, is covered with knotted-wool fabric called "turkey work."

Of black ash, this is the only known bedstead to have survived from 17th-century New England.

Colonial New England flowered early on

sources, not even the English of the King James Version. Considered as literature, the Bay Psalms are not up to either the King James in English or the St. Jerome translation in Latin (the Vulgate), but they are not without great interest of their own over and above their constituting the first example of the writing and making of books in New England, of which, since, there has been no end. The Bay Psalms are rhymed. This detracts considerably from their literary value, but less from their religious value, which was certainly foremost in the minds of the translators; it adds a great convenience as a memory aid, and the New Englanders, like those earlier Athenians, were great ones for memorizing texts. More to the point here, the rhymes imposed a pattern on the Psalms, a surface pattern easy to grasp, to see and understand, as well as to memorize. And pattern is really what this monumental exhibition is concerned with, because pattern is what Jonathan Fairbanks and his colleagues see as the underlying and overriding concern of those 17th-century New Englanders whose days and ways are revealed in the patterns they left behind to be examined in the show.

In his introduction to the catalog, itself a new basic document of New England, Fairbanks writes: "Daily life in 17th-century New England was elaborately patterned. The physical world was divided and subdivided according to complex systems of measurements which developed outwardly from mankind to embrace the universe." This, of course, is a basic human idea, found in Leonardo, Vitruvius and those original Athenians, among others.

In the exhibition, we see English land and village patterns repeated and adapted in the New World. We see patterns of government and patterns of the starry night with the zodiacal signs revealed as corresponding to the parts of the human body.

Other ancient patterns survive into the new society. An oak box built in the early 16th century, and thus already an antique when it was brought over, is decorated on its front with carved Gothic patterns like those of the cathedral windows, double lancets supporting trefoils. The slate tombstone of John Foster, Boston's first printer and an early Harvard graduate, is carved with the low-relief figures of Father Time, with hourglass and scythe, and the skeleton Death attempting to extinguish a candle surmounting the great globe itself—all beneath the inscrutably smiling face of an eight-pointed sun with rays beyond counting, all above the legend, THE INGENIOUS.

A silver caudle cup made in Boston in the last years of the century is patterned with cupids and blossoms. A pewter tankard, brought over from London about the same time, is marked with royalist symbols, showing an armory of the pewter-worker's tools.

A "glazier's vice," which you may think to be that of the Peeping Tom, is nothing of the sort, but a wonderfully intricate machine of gears and cranks, iron surfaces decoratively engraved. Also in iron, a pair of andirons from Rhode Island shows the transition from the older name, "fire-dogs," perhaps because those shapes look like semi-abstract dogs.

All of these things and many others easily make the main point of the exhibition: indeed, these were no crude, cultureless frontier people. They brought their culture with them and set to work at once to duplicate it, adapt it, improve it, perpetuate it. Nor were the Puritans, as Puritans, in the least opposed to decorations and delights for the eye in the necessarily utilitarian world they made and lived in. On the contrary, secular surfaces seemed to be there to be decorated.

There is not exactly a pattern of patterns in the exhibition, which a true 17th-century mind might have wanted. But there is a clear pattern of patterning. On one level, that is simply delight for the eye—delight, too, it should be noted, for the maker. On another, it is the endless, restless, New England search for patterns everywhere in the universe, the ones we find and the ones we make, the search, ultimately, for the meaning of life.

Thus it is that "New England Begins," the exhibition itself, is the ultimate art and artifact product of 17th-century New England, not merely because it is such a great gathering of things from that time and place, but especially because, in the spirit of that time and place, the exhibition looks for, finds and reveals the patterns of life and their meanings.

Portrait in oil of expensively turned-out Margaret Gibbs, age seven, was the work of an anonymous artist.

Æ. 7. M. 1650.

By Ira Mothner

The puzzling and paradoxical worlds of Raymond Smullyan

Whether he is teaching logic to his students or giving brain teasers to his readers, there is more to this wizardly man than meets the eye

Remember "The Lady or the Tiger?", Frank Stockton's classic story of the prisoner forced to choose which of two doors he will open? Behind one waits a lovely lady. Behind the other crouches a hungry tiger. Pick the right door and he gets to marry the lady. Pick the wrong door and he gets eaten.

Now, Stockton's prisoner didn't have a clue to what he'd find behind the doors. But suppose he had. What if there were signs on the doors, and—to make matters trickier—he knew that only one of the signs was true? The other had to be false. The sign on Room One read: IN THIS ROOM THERE IS A LADY, AND IN THE OTHER ROOM THERE IS A TIGER. The sign on Room Two read: IN ONE OF THESE ROOMS THERE IS A LADY, AND IN ONE OF THESE ROOMS THERE IS A TIGER. With that information he chose the right door. Can you?

If you have figured it out, then you are on your way to being hooked by Raymond Smullyan, author of a book called *The Lady or the Tiger?* (just published by Alfred A. Knopf) that takes from the Stockton tale its title and double-door dilemma. Called by the publisher a collection of logic puzzles, paradoxes and other curiosities, the book is much more than that, and Smullyan is not just a clever puzzle maker.

Professor of mathematics and philosophy at the City University of New York (CUNY), Smullyan, 63, is the author of two highly regarded works on mathematical logic, and published his first popular book just five years ago. There have been five more since then.

A spare, angular man, he seems taller than his slightly more than six feet and, with his full beard and long white hair, looks a bit like an Old Testament prophet. But the Jeremiah image is demolished by a boyish grin, and his life is full of the paradoxes he enjoys so much. Smullyan, the college professor, was a high-school dropout. He is a concert-caliber pianist who hardly ever plays in public, and a basically shy

Smullyan, according to one acquaintance, is actually a series of Smullyans, with one inside the other.

Among Smullyan's ladies and tigers, errors are not fatal, but behind each solved puzzle is a tougher one.

Drawings by Michael Ramus

man who adores appearing on the lecture platform or reading aloud from his own works (breaking himself up at almost every humorous line). He is a logician who has embraced the Tao, a talented astronomer who has set aside his telescope, and a magician with professional skills and patter who once earned a living working nightclubs in Chicago.

As the author of *The Lady or the Tiger?*, Smullyan is much like Alice's white rabbit (the one with waistcoat and watch who leads Lewis Carroll's heroine down the rabbit hole and into Wonderland). Smullyan lures readers deeper and deeper into mathematical logic with tricks and games, broad humor and a bizarre cast of borrowed and original characters. Popping in and out of *The Lady or the Tiger?* and his earlier book of logic puzzles (*What is the Name of This Book?*) are Carroll's Alice and Humpty Dumpty, Edgar Allan Poe's Doctor Tarr and Professor Fether, plus an assortment of werewolves, vampires, knights and knaves and Smullyan's all-purpose problem solver, Inspector Craig of Scotland Yard.

Just about all of Smullyan's puzzles are fun: many seem simple, but few are as easy as the first lady-and-tiger problem. (Some other fairly easy ones appear on these pages; the solutions are on page 128.) If, as I, you had trouble with that one, don't despair. Logic puzzles take some getting used to. Look at it again. Remember, one sign *must* be true and one false. Now, if the sign on Room One were true, then the sign on Room Two would also have to be true, and that simply cannot be. So, the sign on Room Two must be true, and the sign on Room One false. Since the false sign on Room One says the lady is in that room, she clearly is not. She must be in Room Two.

The Smullyan puzzles stand out brightly against the rest of today's recreational logic. Martin Gardner, who wrote *Scientific American*'s "Mathematical Games" column for 24 years, marvels unabashedly at Smullyan's inventiveness. "His output of brand-new problems is absolutely fantastic. Aside from the old chestnuts he puts up front in his books, the problems are all original."

What makes the books more than just collections of increasingly complex brain teasers is the ground the puzzles cover, and Smullyan's great trick is how many readers are able to tag along. Because even his most daunting puzzles are simply put, and require so little knowledge of math or formal logic, Smullyan draws even dogged and defensive nonscientists further into his books and deep into the other culture, toward the foundations of modern mathematics. The puzzles move from propositional logic to concepts like set theory and formal systems. In both books, they reach Kurt Gödel's Incompleteness Theorem.

The Politician Puzzle

A certain convention numbered 100 politicians. Each politician was either crooked or honest. We are given the following two facts:

- At least one of the politicians was honest.
- Given any two of the politicians, at least one of the two was crooked.

Can it be determined from these two facts how many of the politicians were honest and how many of them were crooked?

(Answers to puzzles are on p. 128.)

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The Case of the Smithsonian Clocks

Two friends, whom we will call Arthur and Robert, were curators at the Museum of American History. Both were born in the month of May, one in 1932 and the other a year later. Each was in charge of a beautiful antique clock. Both of the clocks worked pretty well, considering their ages, but one of them lost ten seconds an hour and the other gained ten seconds an hour. On one bright day in January, the two friends set both clocks right at exactly 12 noon. "You realize," said Arthur, "that the clocks will start drifting apart, and they won't be together again until—let's see—why, on the very day you will be 47 years old. Am I right?" Robert then made a short calculation. "That's right!" he said.

Who is older, Arthur or Robert?

A landmark piece of mathematical logic, Gödel's Theorem blasted the age-old dream of a single, vast mathematical system, a kind of mathematical truth machine, that could prove any proposition true or false. It set mathematicians seeking instead for limitations on mathematical systems of reasoning and limitations on the computers that depend upon them. What Gödel showed was that any system of logic, except the very simplest, could be made consistent—free from contradictions—only by allowing the formulation of certain propositions that could not be proved either true or false. In less exotic terms, Gödel proved that one could never construct a system of thought that is complete—that does away with uncertainty and paradox—which is just what logicians of the time were trying to accomplish.

By basing his puzzles on Gödel's proof, the discoveries that followed it and other modern mathematical basics, Smullyan puts readers in touch with ideas that even technologically ignorant folk now feel some need to grapple with. The need grows out of anxiety, as we watch mathematics' most enterprising offspring, computer science, plugging into just about every aspect of our culture.

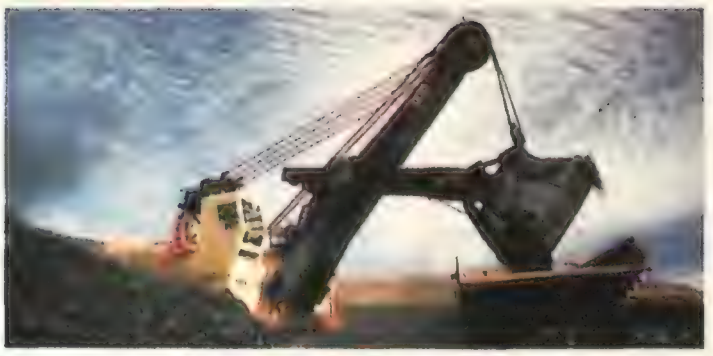
For ignorant grapplers yearning to learn more, Smullyan makes a dandy guide. He teaches logic at CUNY Graduate Center and mathematics at the system's Lehman College. "Elegant" was the adjective most scholarly reviewers grabbed for first when his works, *Theory of Formal Systems* and *First Order Logic,* appeared. "What characterizes Ray's books and papers," says George Boolos, professor of philosophy at MIT, "is how astoundingly clear they are. He is able to strip away what is inessential and give you the core of an idea, undiluted and unvarnished. He is a great simplifier."

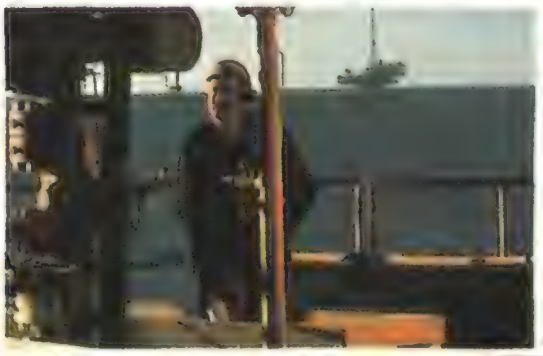
In addition to his puzzle books, Smullyan has produced two other works of recreational logic, *The Chess Mysteries of Sherlock Holmes* and *The Chess Mysteries of the Arabian Knights,* both filled with nontraditional chess problems that challenge the reader to discover not what moves come next but what moves occurred last. Turning almost 180 degrees away from logic, he has taken a wry and thoroughly approving look at Eastern thought in *The Tao is Silent* and published a kind of catchall collection of paradoxes, personal essays and philosophical speculations in *This Book Needs No Title.* Another collection of logic puzzles, *Alice in Puzzleland,* is already in galleys with the more serious if whimsically titled *Philosophical Phantasies* set to appear early next year.

How does he do it all? "Consecutively," explains his friend and former student, Melvin Fitting, who also teaches mathematics at Lehman. "Some people do things simultaneously. He doesn't. Ray has always been episodic in his work. He will get interested in something and more or less abandon everything else. He wrote an essay at one point," Fitting recalls, "and then, for the next couple of years, there was this enor-

Ira Mothner, a New York-based free-lance writer, is actually a series of Mothners, one inside the other.

Remember when most businesses thought their business was none of your business?





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mous stream of essays. Pretty much everything else stopped, and the house was filled with piles of paper.

"After the essay stage," Fitting goes on, "he started doing puzzles. For the next two or three years, everything was puzzles. They were finding their way into all of his work. Now he's gone back to math, but the puzzle element is still there. Often, when he is telling me a new theorem, he will tell it in the form of a puzzle and then give it to me in straight math."

Smullyan does most of his work at a large table in the living room of his home near Hunter Mountain in the Catskills, more than 100 miles and nearly three hours away from Manhattan. Twice a week, on Monday and Wednesday, he heads into the city to teach.

These days, the telescope he made (grinding his own six-inch mirror) is packed away, and he rarely touches either of the pianos or the clavichord in the house. Music is provided by Smullyan's Belgian-born wife, Blanche, also a pianist, who ran a Manhattan music school before the couple moved to their home in tiny Elka Park—a community so small that an issue of the *Journal of Magic History* addressed to Raymond What's-his-name actually reached Smullyan. In the two-story house, manuscripts, proofs and journals are stacked on just about every horizontal surface, and shelves are filled with books of philosophy, religion and handsomely bound editions of Thackeray, Lamb, Defoe, Trollope, Eliot and others, all acquired at bargain prices by Smullyan, who does not read much fiction these days. He does prize, however, his Edgar Rice Burroughs first editions.

Far from ascetic, he is an unreconstructed smoker with a teen-ager's sweet tooth and a positive passion for packaged pound cake. (Blanche keeps stacks of his empty cake containers on the porch to use for growing her seedlings.)

At home, Smullyan spends almost all of his time working quietly, filling pads of lined white paper with his jagged scrawl, while Blanche makes the most of healthy outdoor living, gardening in summer and getting wood for the stoves in winter. Her husband, she notes with affectionate resignation, does neither. "He does no exercise at all," she claims, which is certainly living up to what he calls his "idealized self-image" as "a philosopher of leisure, idleness, and quietude" and altogether in keeping with the Taoist doctrine of *Wu-Wei*, action through inaction.

In the classroom, Smullyan is anything but leisurely or quiet. Early this spring semester, I watched him teach a graduate-level logic course, as he lurched to the blackboard (where he writes a serviceable hand and complete sentences) and paced about his desk, fidgeting and chuckling. He would break into a small sibilant laugh at problems that seemed to leave his students more confused than amused.

Before class began, he tried to warm up the group, tossing out some simple puzzles the way a baseball coach bats out grounders. "There are twin brothers," he told the dozen or so students in the crowded little room. "One lies and one tells the truth. One is named John. How can you discover which brother is John by asking one three-word question?"

The answer Smullyan gave them, allowing that there might be others, was the three-word question, "Is John truthful?" As he explained it, if John were indeed truthful, then John would answer Yes to the question, and his brother, the liar, would answer No. If John were not truthful, then he would also answer Yes to the question, while his brother, the truth teller, would answer No. In either case, whether John were truthful or not, the brother who answered Yes would be John.

Five-Ace Merrill rarely appears

Smullyan, who loves to write and tell absentminded-professor stories, real and apocryphal, could easily pass as the subject of one himself as he ambles through the corridors of the Graduate Center in midtown Manhattan, seeming neither surprised nor distressed when he wanders off the elevator onto the wrong floor. It is hard to imagine him when he played as a suave night-club magician, Five-Ace Merrill. But there seems to be an almost infinite number of different Smullyans and the magician hardly ever appears in class. Smullyan's current teaching style, according to Malgorzata Askanas, who earned her PhD at the Center in 1975, derives from his puzzles. "He sort of strings you along, and then you find yourself in the heart of Gödel's Theorem. You don't notice that you are doing what some people would consider 'hard stuff.' It all seems very easy. You just don't realize you are learning something profound."

As an educator, he holds to the notion that children

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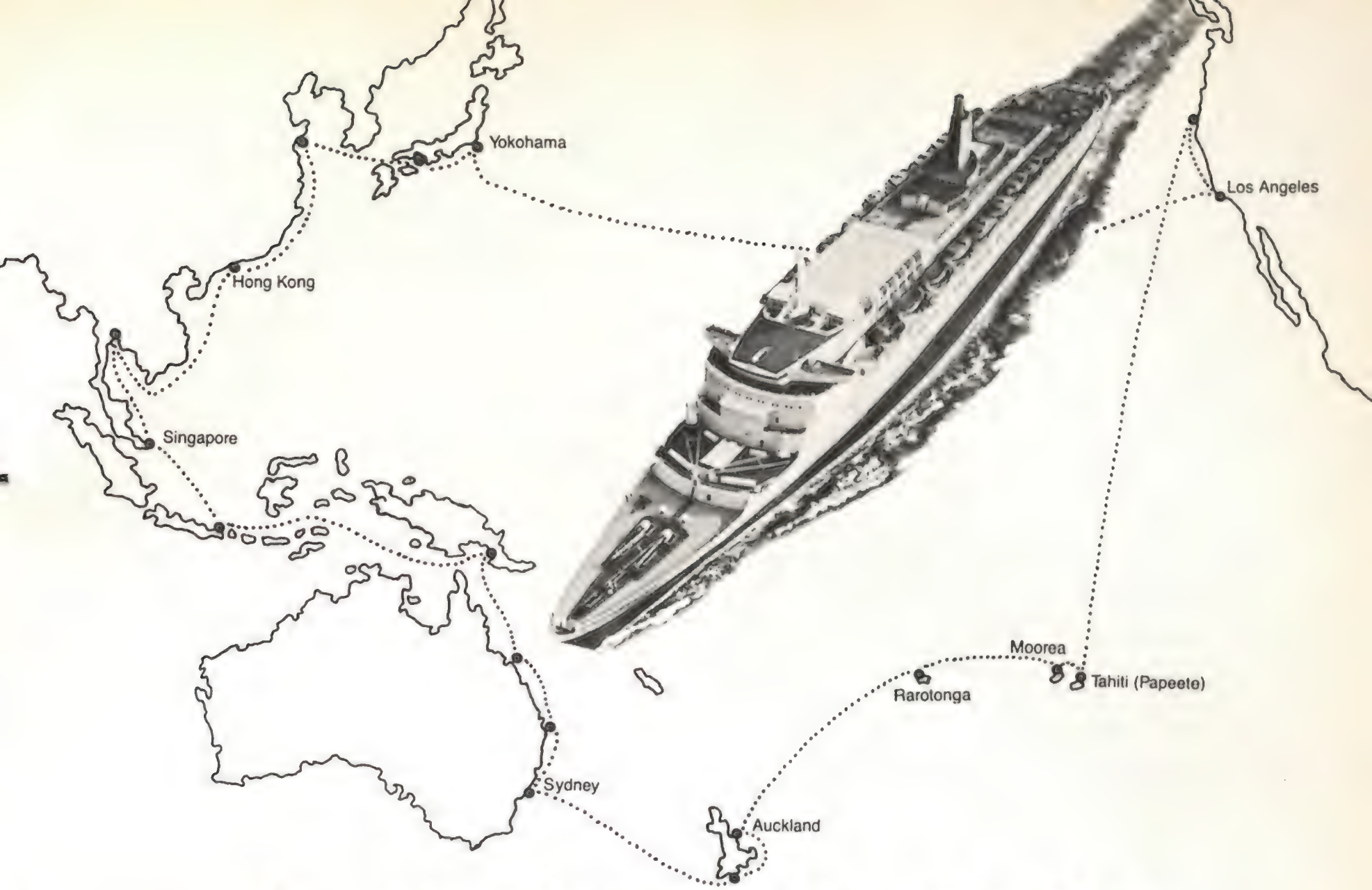
Inspector Craig Visits Transylvania

Inspector Craig of Scotland Yard was called to Transylvania to solve some cases of vampirism. Arriving there, he found the country inhabited both by vampires and humans. Vampires always lie and humans always tell the truth. However, half the inhabitants, both human and vampire, are insane and totally deluded in their beliefs: all true propositions they believe false, and all false propositions they believe true. The other half of the inhabitants are completely sane: all true statements they know to be true, and all false statements they know to be false. Thus sane humans and insane vampires make only true statements; insane humans and sane vampires make only false statements. Inspector Craig met two sisters, Lucy and Minna. He knew that one was a vampire and one was a human, but knew nothing about the sanity of either. Here is the investigation:
Craig (to Lucy): Tell me about yourselves.
Lucy: We are both insane.
Craig (to Minna): Is that true?
Minna: Of course not!
From this, Craig was able to prove which of the sisters was the vampire. Which one was it?

are eagerly waiting to be filled with the right kinds of knowledge. "If they are interested," he declares, "they will learn." "And if they are not interested?" I ask. "Leave them alone," he insists. Smullyan cheerfully admits that he doesn't believe in grades and considers reporting a student's failure as an utter betrayal. He doesn't believe in degrees either. "Let kids learn what they want to learn," he says. "Let employers test them when they compete for jobs."

Smullyan's unorthodox views on education spring naturally from his experiences in and out of school, for he was, he admits, "a perennial dropout" and is "mainly self-taught." Born in Far Rockaway, Long Island, then a pleasant seaside village at the ultimate reaches of Queens county, Smullyan moved to Manhattan with his family when he was 13 and attended Theodore Roosevelt High School in the Bronx to take special music courses the school offered.

Music and science were his chief interests, and he saw no reason why he could not pursue careers in both fields. "I was a bit of a prodigy," he recalls; he won a gold medal in a citywide piano competition when he was 12. The decision to quit in mid-high school was made, he explains, "because no one there would teach



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me what I wanted to learn," mostly modern algebra and logic.

He learned them on his own and, after several years of truly independent studies, took the College Board exams and was accepted by Pacific University in Oregon, the first of five colleges he was to attend. Next was Reed College, followed by a year in San Francisco, where he studied piano, and a return to New York to work at math and logic, begin devising chess puzzles and start learning magic.

At 24, Smullyan gave formal education another shot, enrolling at the University of Wisconsin, where he stayed for a year before transferring to the University of Chicago. After a semester there, he dropped out again but kept on studying, and taught music at Chicago's Roosevelt College. Back in New York for two years, he began performing as a magician in Greenwich Village nightclubs and finally went back to the University of Chicago when he was 30.

Smullyan was clearly in no rush to wind up his studies. He took courses at the University for the next several years and moved his magic act to downtown Chicago. In 1955, Rudolf Carnap, a celebrated philosopher of science under whom Smullyan studied, recommended him for a post in the math department at Dartmouth. He got it, based on a paper he had written, although he lacked even a high-school diploma. After teaching at Dartmouth for a year, the University of Chicago awarded the then 35-year-old Smullyan his B.A., giving him credit for a calculus course he was teaching but had never taken.

In 1957, Smullyan moved to Princeton University, where he earned his PhD and taught until 1961, when he joined the mathematics department at Yeshiva University. Seven years later, he came to CUNY.

While at Princeton, Smullyan had shown one of his chess problems to a student. Sometime later, the problem appeared in Britain's *Manchester Guardian*. It seemed the student's father had wanted to show the *Guardian*'s editors the kind of material he hoped they would run. The paper took the hint, and Smullyan began to publish chess problems there regularly.

Sometime in the mid-1970s a few of his chess problems appeared in *Scientific American* with the note "author unknown." Smullyan contacted Martin Gardner, who had already run some of his logic puzzles and knew him as a fellow magician. "I told Gardner I had a whole bunch and planned a book. Gardner wrote back and wanted to know why I didn't stop shilly-shallying and get the book done."

Smullyan's chess problems are not the kind that chess enthusiasts are used to. "They belong," Smullyan explains, "to the field known as retrograde analysis. Unlike the more conventional type of chess problem (which is concerned with the number of moves in which white can win), these problems are concerned only with the *past* history of the game." They pose such questions as which way the pieces were moving or which piece has been promoted. They can ask for the location of a piece missing from the board, the identity of an unidentified piece whose position is known, or the square on which a particular piece was captured.

Exercises in reasoning backward

What the reader gets out of the puzzles, in addition to pure pleasure, is plenty of exercise in reasoning backward, and the case for this kind of deduction was best made by old Sherlock himself (not Smullyan's but Sir Arthur Conan Doyle's) in *A Study in Scarlet*: "In solving a problem of this sort, the grand thing is to be able to reason backward. That is a very useful accomplishment, and a very easy one, but people do not practice it much. In the everyday affairs of life it is more useful to reason forward, and so the other comes to be neglected. There are 50 who can reason synthetically for one who can reason analytically."

Smullyan is not planning to delight or distress chess players with more problems in retrograde analysis, at least not in the foreseeable future. His next book out, *Alice in Puzzleland*, introduces some new examples and new varieties of logic puzzles. What Martin Gardner seems to value most in Smullyan are "the very tricky and funny ways he has of getting you into really deep water. Nobody has done that before. Lewis Carroll invented all kinds of logic puzzles, and they were very amusing, but when you get down to what they are all about, they're all about syllogisms. Ray has started where Carroll left off. He's done what Carroll might have done if he were living today."

Another admirer of Smullyan's is Douglas R. Hofstadter, author of the Pulitzer Prize-winning book *Gödel, Escher, Bach: An Eternal Golden Braid*. They both taught at Indiana University. Hofstadter recog-

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nizes a variety of different Smullyans or a series of Smullyans, one inside the other. "I have never penetrated very far into that many-layered structure," he says. "I don't know much about the inner Smullyan." Not many do.

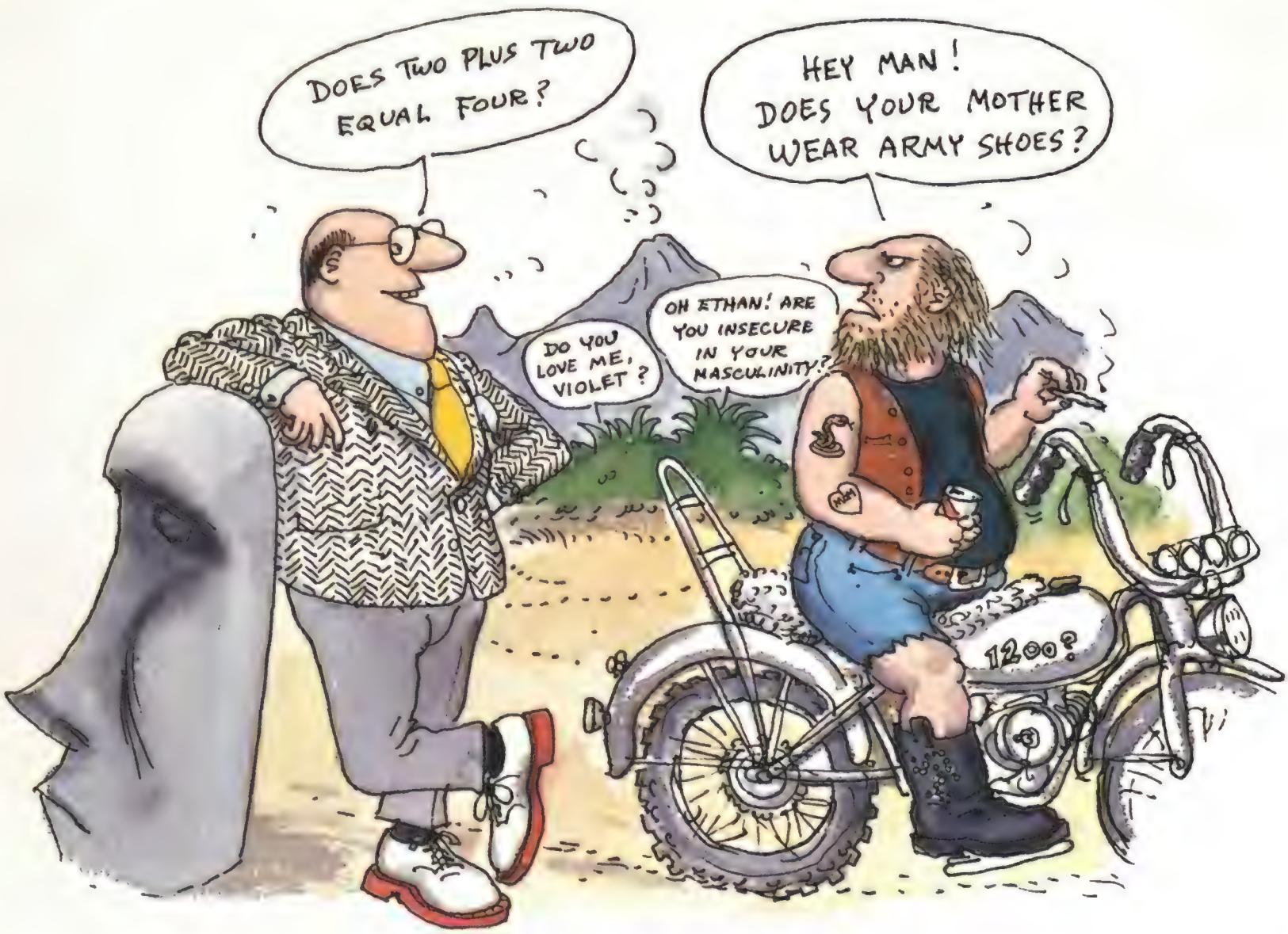
Dr. O. B. Hardison jr., director of the Folger Shakespeare Library in Washington (SMITHSONIAN, April 1982) is another fan who appreciates the many different aspects of Smullyan and tells this story about Smullyan the magician: "I was at a lovely dinner party with him in New York and he was performing tricks for our host's 11-year-old daughter. It was dazzling, astounding, almost sinister. He was pulling coins out of her ear and out of her nose and carrying on this delightful, witty patter the whole time.

"Finally, he had her clench her fist and put it on the table. He touched the top of her hand, and when she opened her fist there was a crumpled dollar bill in it. That's when the girl shrieked and ran upstairs. It was about ten minutes before she could compose herself and come back down. How Smullyan did it, I can't possibly say."

The Island of Questioners

Somewhere in the vast reaches of the ocean, there is a very strange island known as the Island of Questioners. It derives its name from the fact that its inhabitants never make statements, they only ask questions. The inhabitants ask only questions answerable by Yes or No. Each inhabitant is one of two types, A and B. Those of type A ask only questions whose correct answer is Yes; those of type B ask only questions whose correct answer is No. For example, an inhabitant of type A could ask, "Does two plus two equal four?" But he could not ask whether two plus two equals five. An inhabitant of type B could not ask whether two plus two equals four, but he could ask whether two plus two equals five.

I once visited this island and met a couple named Ethan and Violet Russell. I heard Ethan ask someone, "Are Violet and I both of type B?"
What type is Violet?


DOES TWO PLUS TWO EQUAL FOUR?
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OH ETHAN! ARE YOU INSECURE IN YOUR MASCULINITY?
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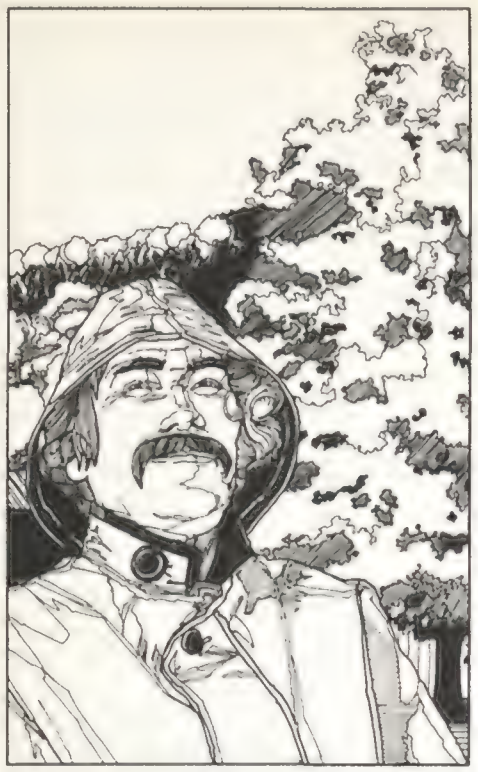

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Puzzle solutions

The Politician

A fairly common answer is "50 honest and 50 crooked." Another rather frequent one is "51 honest and 49 crooked." Both answers are wrong. Now let us see how to find the correct solution.

We are given the information that at least one person is honest. Let us pick out any one honest person, whose name, say, is Frank. Now pick any of the remaining 99; call him John. By the second given condition, at least one of the two men—Frank, John—is crooked. Since Frank is not crooked, it must be John. Since John arbitrarily represents any of the remaining 99 men, then each of those 99 men must be crooked. So the answer is that one is honest and 99 are crooked.

Another way of proving it is this: the statement that given any two, at least one is crooked, says nothing more or less than that given any two, they are not both honest; in other words, no two are honest. This means that at most one is honest. Also (by the first condition), at least one is honest. Hence exactly one is honest.

The Case of the Smithsonian Clocks

We must first determine the number of days it will take for the two clocks to come together. Since one clock is losing time at the same rate as the other is gaining, then the next time they will be together is when the slow clock has lost six hours and the fast clock has gained six hours. (Both clocks will then read six o'clock; of course they will both be wrong, but together.)

Now, ten seconds an hour is four minutes (240 seconds) a day, which is one hour in 15 days, or six hours in 90 days. And so the clocks will come together exactly 90 days after the day in January on which they were set right. Also, they will come together on Robert's 47th birthday, which is in May.

How can 90 days be fitted between a day in January and a day in May? Consulting a calendar, we see that there are exactly 90 days between January 31 and May 1 *providing it is not a leap year!* In a leap year the shortest possible time between any day in January and any day in May is 91 days (since February 29 falls in between). This proves that Robert's 47th birthday cannot fall in a leap year, and therefore Robert could not have been born in 1933 (since 47 years after 1933 is 1980, a leap year). Therefore Robert must have been born in 1932, and it is Arthur who was born in 1933. And so Robert is the older (incidentally, the year of the story—the year in which the clocks were set right—must be 1979).

Inspector Craig visits Transylvania

Lucy's statement is either true or false. If it is true, then both sisters are really insane; hence Lucy is insane, and the only insane Transylvanian who can make a true statement is an insane vampire. So, if Lucy's statement is true, then Lucy is a vampire.

Suppose Lucy's statement is false. Then at least one of the sisters is sane. If Lucy is sane, then, since she has made a false statement, she must be a vampire (because sane humans make only true statements). Suppose Lucy is insane. Then it must be Minna who is sane. Also, Minna, by contradicting Lucy's false statement, has made a true statement. Therefore, Minna is sane and has made a true statement; so Minna is human and, again, Lucy must be the vampire.

This proves that regardless of whether Lucy's statement is true or false, Lucy is the vampire.

The Island of Questioners

We must first find out Ethan's type. Suppose Ethan is of type A. Then the correct answer to his question must be Yes (since Yes is the correct answer to questions asked by those of type A), which would mean that Ethan and Violet are both of type B, which would mean that Ethan is of type B, and we have a contradiction. Therefore, Ethan can't be of type A; he must be of type B. Since he is of type B, the correct answer to his question is No, so it is not the case that he and Violet are both of type B. This means Violet must be of type A.

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Points of origin

We owe some of our modern sartorial habits to faith, folklore and varied vicissitudes of war

You could say, I suppose, that fashion history all began with Adam and Eve. Genesis tells us the hapless pair found themselves naked and so fashioned loincloths out of fig leaves. Dressing for dinner started then and there.

In fact, the influential English Bible of 1560 earned for itself a measure of fame because of the quaint way it rendered the word loincloth. It suggested that the couple had such skill with the needle that they could make "breeches" out of those leaves. The book's instant nickname: the Breeches Bible. The road from the proverbial fig leaves of Eden to the Halstons, Guccis and Beenes of today is paved with such delights and fancies.

A basic generalization that can be made about the movement of fashion is that styles generally moved from the East to Western Europe. The Romans looked east especially, taking their notions of style from the ancient Greeks. A pointed example was the custom among the smart set of wearing Greek garb to attend the athletic games, the Neronia, instituted by Emperor Nero in his new stadium.

Christianity followed the custom of turning to the East for its vestments. Consider three hats associated with church dignitaries: the bishop's miter, the papal tiara and the cardinal's hat. The miter, a tall hat with a deep cleft in the middle, is similar to one worn by early kings in the East. It was thought that the added height of the hats contributed to regal stature. (The miter box of carpentry may be so named because angled joints are reminiscent of the construction of the bishop's hat.) Similarly, the tiara which was worn by the pope is also suspected of having an Eastern origin. A bas-relief from Cyrus the Great's palace at Persepolis shows a beehive hat with its three encircling bands.

Papal tiaras, such as this one from St. Peter's, probably had Eastern origin.

The cardinal's hat is like that worn by the Greek messenger, whose name in Greek (*apostolos*) is in fact what a cardinal is: an apostle who spreads the word. His hat is very broad-brimmed, with a low crown and long ties (*redimicula*) that hang from its sides so it can be slung over the back. That hat and those ties are symbols of cardinals everywhere. They are associated with Christ Church College, Oxford, founded as Cardinal College by a famous cardinal, Wolsey, in 1525. To this day, undergraduates chalk intercollegiate rowing or soccer scores on Oxford walls using only a cartoon of the hat and *redimicula* to indicate Christ Church.

The folklore associated with clothing is rich and varied. And it readily shows how keeping us warm may be the least of the many benefits we derive from our apparel. A Southern anglers' belief is that "a little piece of rag from one's shirt, tied to a line just above the hook, is especially attractive to speckled perch." In the same region, perhaps more pragmatically, a hat that keeps blowing off is "a sign of rain."

In 18th-century England, a bride who showed up on her wedding day in only her chemise was freeing her future husband from her earlier debts. This tack was tried at St. Clement Danes, London, in 1723 by a certain Mrs. Brittain who intended to thus wed a poor brewer's servant. Under the same conviction, the *Chester Courant* reported in 1800 that a bride had recently appeared at Ashton Church, Lancashire, *a buffo*—"like mother Eve"—but the embarrassed clergyman refused to perform the ceremony. And about 1840, a wedding was performed for a bride wrapped only in a sheet.

Buttons also figure importantly in folklore. An old belief asserted that a button from a drowned man's coat could be used to locate his body. When floated on a piece of wood, the button—via the agency of homeopathic magic—would ostensibly

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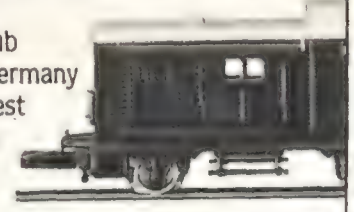

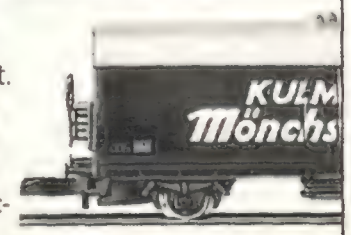

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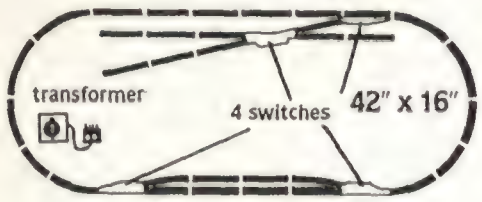

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pilot the board right over to the dead man.

A witness to such rites, practiced in England as late as the 19th century, noted: "Is it possible that in the year of grace, 1874, adult and vaccinated citizens know no better than this?" Indeed, it was possible, for that is the essence of folk customs—they are an extra measure of protection against the predictable but ineluctable calamities of life.

Thus, on the isle of Carpathus, in the Aegean, it was the custom never to button the clothes put on corpses. The idea was that the spirit should be free and unfettered for its departure from the body. And back in England, the Act for Burying in Woolen (1678), passed to benefit the woolen industry, demanded that corpses be interred in simple shifts, with no buttons or unnecessary needlework.

There is, however, a custom associated with buttons, whose actual origin is lost to me, but is still practiced today. It is traditional for men's coats to button on the right side, women's on the left. The popular and often repeated reason for this is said to descend from the days when a man needed to get to his sword quickly. It is reasoned (unsoundly I believe) that the man could more easily unbutton with his left hand and reach for his sword with his right.

Even socks and shoes have been enlisted in Man's attempts to fathom the unknown. To keep witches from disturbing your slumber, according to a North Carolina custom, turn your socks inside out. Or throw a shoe at a fisherman and he'll have good luck. So widespread and fanciful were the omens connected with shoes that at least one classical figure put his foot down, so to speak. The story goes that a Roman orator was told that mice had eaten his shoes, an event fraught with meaning. Of greater portent, he suggested, would have been if the shoes had eaten the mice.

Geography also plays a role in clothing history. One of the most popular fabrics in the world today, denim, started life rather more elegantly as "serge de Nîmes." Since early modern times, Nîmes had been a cloth-manufacturing town in Southern France, which in the late 19th century gave its name to the cheap cotton twill that won the American West.

But if denim was just an inexpensive cotton imitation of woolen serge, this fact was linguistic justice. Woolen serge was thought to be an imitation of heavy silk, which may have been the fabric "sarge" that was mentioned by Chaucer in *The Knight's Tale*. This transference of the name from silk, to serge, to denim underlies a general truth about life itself, noted by a 19th-century lexicographer in the *Oxford English Dictionary*: "names of textile fabrics often come to be applied to materials cheaper and coarser than those which they originally designated."

Events, as well as places, have also had their influence on fashion. From a clothing point of view, the record-setting event must surely have been England's war with Russia, fought in the Crimea in 1854-56. It gave us the Raglan sleeve, the Cardigan sweater and the Balaclava helmet. Most of us know the disastrous battle of Balaclava from Lord Tennyson's "The Charge of the Light Brigade" in which the cavalry pressed forward to certain death while "all the world wonder'd." Actually, this minor battle, fought on October 25, 1854, was a defense of a fetid supply base, while the real English and French objective, Sevastopol, remained secure in Russian hands. The famous charge of the brigade—in which about 240 out of 675 were killed or wounded in 20 or so minutes—turned out to have been one of the great military blunders of all time. Yet, such is the power of poetry, many of those who fought that day are remembered as heroes.

It is thus no surprise that some of the heroes should be more remembered today for their sartorial elegance. Lord Raglan, the British commander in the Crimea who gave the senseless order to charge, is known for his innovative overcoat design, whose sleeves extended clear up to the neck. The Earl of Cardigan, who commanded the Light Brigade and fearlessly led their charge into the valley of death (and back out again, for he was miraculously spared), is now known for his knitted woolen waistcoat. The Balaclava helmet is a knitted cap that can be pulled down to cover the head, neck and part of the shoulders—it attests to the fierce Russian cold that bitterly attacked both armies during that winter of stalemate.

Another military personage who is connected with clothing history is St. Martin of Tours (315-397). As a young army officer traveling near Amiens, he came across a naked beggar shivering in the winter's cold. Martin immediately saw the man as a Christ figure, and with his sword—ordinarily reserved for belligerent

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thrusts—he cut his flowing cloak in half to share with the man. He resigned his army post and became a Christian and a bishop of the early Church. After his death, Martin's cloak (or half of it, one supposes) was preserved as a relic by the Frankish kings and carried before their armies into battle—a practice that seems to miss the whole point of the saint's life. In any case, the medieval Latin word for cloak is *capella*, and thus the shelter he offered the beggar in Amiens is remembered today by the profusion of small places of worship, chapels, that dot the landscape worldwide.

A related word, chaperon, also had medieval roots. Originally, the French *chaperon* was a kind of hood, first worn by nobles and, after the 16th century, by women. But the word came to mean, metaphorically, the experienced elder who sheltered inexperienced youngsters much as the cloth hood protected the head. The word was first recorded in English in its new meaning in 1720. Similarly, the French *chapeau* was adopted by 17th-century England as the rather specialized kind of hat, the *chapeau-bras* (or hat for the arm). This three-cornered silk hat was worn for ceremonial occasions, especially at court, where it seldom graced its owners' heads and instead served as a fillip for their armpits. Today, the word chapeau is reserved as a purely whimsical or high-falutin variation for the prosaic hat.

Indeed, such a wealth of outrageous apparel appeared in Restoration England that clothing became a major butt of literary satire. By the early 18th century, men wore false calves under their hose, fav'rites (curls on the temples) and the foppish burdash. The latter, a fringed sash worn about the waist, was known to be a source of contempt in literary circles, although it continued in vogue among the fashionable. (Some lexicographers connect it with the slightly dandified reputation attached to haberdashery.)

My particular favorite among the lore of clothing is the story of the "notorious pick-pocket" who must have worked his territory wearing a three-armed jacket. As first described in 1647, this Clever Dick sought out his victims during the standing of the Creed in English churches. While the devout held up their hands for the prayer's rehearsal, he held up a false one. And his real hand was delving into the pockets of his neighbors.

Michael Olmert

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PLATO said that the unexamined life is not worth living. On a parallel theory that the unexamined society is not worth having, TIME periodically scrutinizes one or another of the ideas that are basic to the way we live, ideas that we take for granted but perhaps shouldn't.

In a recent issue of TIME, the jury system came under just such scrutiny. And high time, many would say, remembering the inefficiency of that strict and stately protocol.

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Book Reviews

The Watercolours and Drawings of Thomas Bewick and His Workshop Apprentices
Edited by Iain Bain
MIT Press (two volumes), $225

If the name of Thomas Bewick conjures up anything these days, it is all too often a sense of terminal cuteness. True, he was the master of animal art. And, too, his work was drawn on a very small scale, suited to the dictates of woodblock engraving used for simple black-and-white printing.

As this lavish two-volume set illustrates, however, Bewick was so much more—a pioneering observer of nature, a pristine stylist in his art, and, surprisingly, a social critic in touch with the themes of the Romantic Rebellion, which swirled throughout his working life.

Unfortunately, Bewick (1753-1828) fits rather too neatly into a solitary corner of art history. To most, he was an engraver-craftsman par excellence, whose most celebrated woodblock is "The Chillingham Bull" (1789), which was a copy of a painting by Sir Edwin Landseer (SMITHSONIAN, November 1981). In fact, Bewick may be better known for introducing a taste for natural history to the masses than he is for art. His first collection, *A General History of Quadrupeds* (1790), was an immediate hit and over the next 34 years ran through eight editions. Later followed volumes on land birds, water birds, Aesop's Fables and a projected work on British fish (never completed).

His work was directed toward the small scale by the poverty of his Northumberland youth. It was his habit to fill up any available space on his school slates and scrap papers with finely detailed sketches. In a memorial tribute, a friend wrote this of Bewick's *modus operandi*: "There were three windows in the front room, the ledges and shutters whereof he had pencilled all over with funny characters. . . . These people were the source of great amusement: the probable histories of whom, and how they came by their ailings, he would humorously narrate, and

A Bewick engraving: look closely and you will find two sportsmen on stilts.

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sketch their figures and features in one instant of time. I have seen him draw a striking likeness on his thumb-nail, in one moment; wipe it off with his tongue, and instantly draw another."

This experience with working "in little" stood him in good stead with the boxwood engraving tradition just coming into vogue. The process was as follows. The artist would make a preliminary drawing. This would then be redrawn (or traced) on the cross-grain end of a piece of boxwood. The drawing on wood would then be used as a guide for the engraver, who used a burin to cut the picture into the wood. Boxwood was selected as the medium because its extreme hardness enabled it to withstand repeated printing impressions and to capture minute details and an infinite number of crosshatch patterns for shading. But since boxwood trunks are seldom more than six to nine inches in diameter, larger engravings were rare.

The beauty of a collection like this—lovingly printed and carefully annotated by scholar Iain Bain—is that it allows us to see so much more than just the ostensible subject of the print. Rather than merely giving the profile of the animal, Bewick was at pains to include intricate backgrounds—leaves, logs, rocks. Often, tiny versions of the animal being described appear at play in the distance. See, for example, his views of "The Ban-

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Bird of prey by Bewick: bearded vulture

Dog" in the barnyard with the sow, or "The Harrier" running at the chase. Humans, too, enliven the Bewick backdrops. The illustration of the Scottish shepherd's dog presents a Highland shepherd in bonnet and plaid.

And there is also the social criticism. In one view, "Two Blind Fiddlers" are led about by a boy holding out a hat for alms. As they approach the walls of a great man's estate, a sign warns: "Steel Traps—Spring Guns." But the child cannot read. Nor—as this art suggests—would his innocence allow him to comprehend the mean spirit standing behind those words. A vignette entitled "Drunk on the King's Birthday" depicts a supine tippler dead to the world on June 4, 1795, George III's natal day. Overhead, Bewick has included two circling crows, a comment on the drunkard's carrionlike state. Bewick seems to have added the crows as an afterthought while he was cutting the block: they do not appear on the transfer drawing.

Also not to be missed are the artist's high jinks: "Two Sportsmen Crossing a River on Stilts" (p. 136), children pretending to ride gravestones ("The Churchyard Cavalry"), and "A Countryman Drinking at a Spring." The figure sips from the "flipes" or brim of his hat.

Collaterally with publication of the boxed set, MIT Press is also issuing a more modest volume, *Thomas Bewick's Birds: Watercolours and Engravings* ($8.95), which reprints a number of the illustrations of the original. And lest you think these mere fanciful pictures, consider the following. Almost 40 years after Bewick's death, Victorian novelist Charles Kingsley wrote this about the usefulness of the bird books: "When [the] book on birds first came out, my father, then a young hunting squire in the New Forest, Hampshire, saw the book in London, & bought at once the beautiful old copy [which] was the text book of my boyhood. He as sportsman & field-naturalist, loved the book, & carried it with him up & down, in days when no scientific knowledge could be got—from 1805-1820; . . . he was laughed at in the New Forest for having 'bought a book about dicky birds' —till his fellow squires, borrowing the book of him—agreed that it was the most clever book they had ever seen, & a revelation to them. . . ." Dicky birds, indeed.

Michael Olmert
Writer and critic

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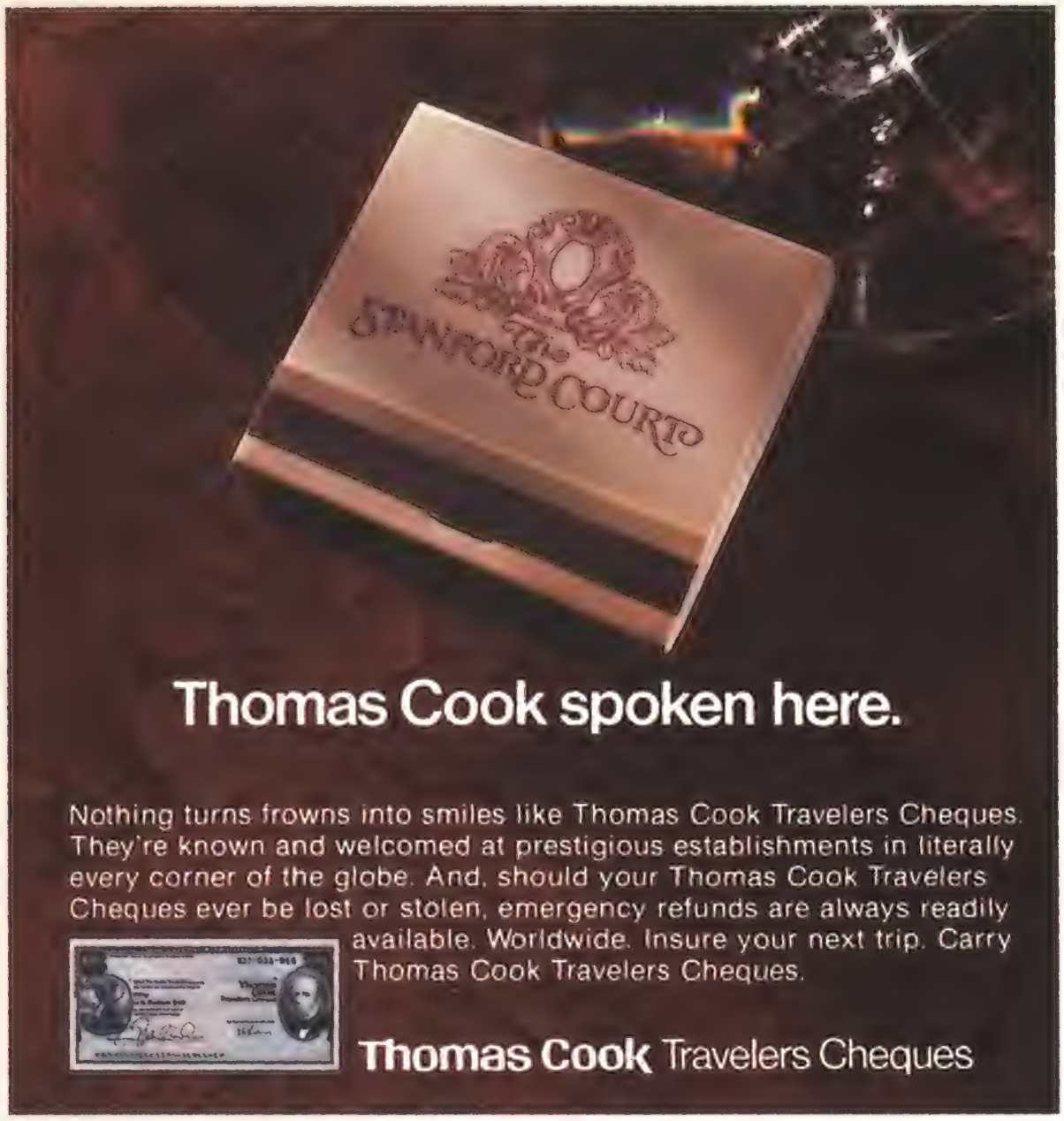
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Elsie de Wolfe: A Life in the High Style
Jane S. Smith
Atheneum, $19.95

Among the many foibles for which turn-of-the-century America was notorious was the inchoate jumble of furniture and gimcracks in which even its most prosperous citizens lived. Their rooms were smothered in Lincrusta, draped in velvet portières and stuffed with bibelots of every description.

Lightness and brightness had vanished, along with the puritan plainness that characterized our culture before the Civil War. A most influential and enterprising crusader against this domestic dreariness was Elsie de Wolfe (1865-1950), who, as America's first successful professional interior decorator, helped transform good taste from an attitude into an industry. Along the way, she introduced blue hair, little white gloves and Pink Ladies. Gazing upon the Parthenon for the first time, she trilled, on cue, "It's beige—my color!"

Precisely how an unprepossessing young woman on the periphery of polite circles became one of the most imperious tastemakers, famous hostesses and successful businesswomen of her time is the theme of Jane S. Smith's superbly researched and skillfully narrated biography. Because de Wolfe's life spanned nearly a century and she rode wave after wave of American and European society, *Elsie de Wolfe* is both a detailed presentation of an archetypal American success story and a sharp recital of how the rich and fashionable saw fit to live.

Elsie's career was a triumph of energy over obscurity. Her beginnings were not promising. Scrawny, plain, unmoneyed and saddled with a New York interborough accent, she saw herself as an ugly child born into an ugly age. Elsie's position in Old New York was precarious, but she was sent to Scotland for four years of finishing school and managed to get herself presented to Queen Victoria.

From then on, her sights were fastened firmly on the main chance. That, most assuredly, did not include a husband and children. During her season abroad, she was more infatuated with the professional beauties fluttering around the Prince of Wales than with any man she met. In 1892 she and Elisabeth (Bessie) Marbury, a pioneering theatrical agent, established a bachelor household off New York's Gramercy Park. At that time, Elsie herself

was on the stage. On Sunday afternoons they were "at home," and anyone from Oscar Wilde to Isabella Stewart Gardner could and did stop by.

Elsie was an unexceptional actress, distinguished more by the Parisian frocks she wore, such as a tea gown tiered in 30 shades of red chiffon, than for her talent. But being unexceptional was not Elsie's style. In 1905 she turned her reputation for elegance into a counseling service, advertising herself as a full-fledged, full-time decorator, designing and arranging interiors. With the help of Bessie Marbury and architect Stanford White, she immediately landed a commission to decorate the Colony Club in Manhattan, an exclusive women's meeting place that White had designed. Elsie blended comfort and suavity, a standard recipe today but unique then. She hid the radiators in cabinets, introduced a gardenlike color scheme of green and white, and covered the chairs and sofas with bright chintz—innovations still very much with us.

The Elsie legend was off and running. It soared into the stratosphere eight years later when Henry Clay Frick asked her to decorate his mansion. She led him to one of the finest collections of 18th-century French furnishings ever to appear on the market. An estimated several million dollars changed hands in less than an hour and Elsie got ten percent of it. Writes Jane Smith, "The ability to inspire some-

Elsie de Wolfe as a Broadway actress poses for an 1890s theater cabinet card.

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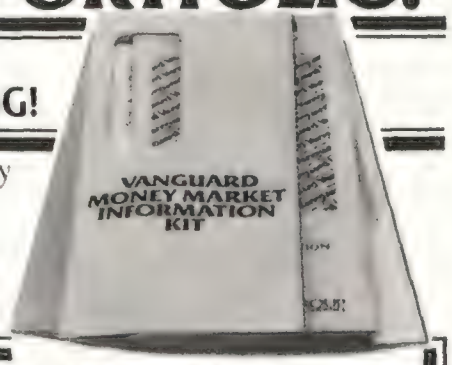

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one else to extravagance would remain her greatest talent for a half century."

To Elsie, the Villa Trianon, the exquisite property she and Bessie Marbury bought at Versailles, was her master achievement. Here she renovated, decorated and entertained grandly, though she returned home to continue her career and sponsor musical comedies by the likes of Jerome Kern and Cole Porter. During World War I she nursed burn victims in a French field hospital.

At the age of 60 Elsie decided to marry, surprising many of her friends. The bridegroom was 55-year-old Sir Charles Mendl, a press attaché at the British Embassy in Paris. Some speculated that Elsie liked the idea of a title and that Sir Charles liked the idea of Elsie's income. They lived together platonically for 25 years. As Lady Mendl, Elsie spent the 1940s shuttling between New York, Paris and Beverly Hills, adding a host of screen stars to an acquaintance that already included the Windsors, Colette and Gertrude Stein.

Elsie de Wolfe's most original creation was not, as she believed, the Villa Trianon or any interior she had fashioned. It was her own rapacious, manipulative, outrageous, ingenious self. Jane Smith is to be congratulated for bringing this remarkable figure so vividly to life.

Avis Berman
New York writer on art

Iberian Villages, Portugal & Spain
Norman F. Carver jr.
Documan Press, Kalamazoo, $17.95

This is, very simply, a lovely book. But there is more to it than its beautiful pictures and the author-photographer's sensitively phrased descriptions of Spanish and Portuguese villages. In black-and-white as well as color photographs, Norman Carver, a practicing architect, shows us the many moods and faces of vernacular Iberian architecture. There are small towns fortified behind stout walls, others balancing on the edge of cliffs, still others carved into the sides of mountains. The stuccoed and whitewashed hill towns of the south are sparkling and cheerful; those of the north, medieval still, stand somber in massive stone and timberwork.

Even in their astonishing variety, Iberian villages have a number of characteristics in common, as does all folk architecture. And one of the reasons Carver has

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been wandering around the world on and off for the past 20 years, taking superb pictures of vernacular architecture, is to bring its lessons to our attention. He has felt a degree of urgency about the task. For one thing, folk architecture is rapidly vanishing, and as it disappears so will its obvious, simple—but rarely remembered or applied—admonishments. These Carver began to elaborate in the first published product of his wanderings, the book *Italian Hilltowns* (SMITHSONIAN, November 1979). The hill towns, he wrote, "did not aim for an artificial impressiveness or follow an alien pattern of pretentious buildings and monumental spaces. Their impressiveness lay in the rhythmic repetition of a single house type, compact and dense, arranged to reflect the social realities of small town life."

Italian Hilltowns, as it turned out, was the first in a series of books Carver would author on vernacular architecture. *Iberian Villages* is the second: still to come are volumes on Greece, the Arab world, Northern Europe and Japan.

In *Iberian Villages*, the author points out that no matter where it is found and no matter how different its appearance may be, *all* vernacular architecture is precisely adapted to the peculiarities of environment and site; it reflects the building process, local skills, materials and technology: its forms and shapes are determined by the community's shared traditions, rather than being dictated by the taste of a few specialists; its variety comes from detailing, not from juxtaposing a hodgepodge of building types; its ornamentation is functionally derived, rather than being an add-on; it grows slowly by stages, and it is modestly and comfortably scaled.

What this tells us, among many other things, is that you cannot raise overnight 20,000 units of housing, call it a "new town" and expect it to be anything like a real town. Nor is the present attempt to return to vernacular styles of the past—adding a fake Victorian touch here, a phony Roman column there—going to help. Those things belonged to an earlier time, which we can enjoy, but copy only at the risk of being very silly and superficial. In fact, as *Iberian Villages* clearly shows, style is not really the issue.

As is known, Iberia's southern villages had a strong influence on Le Corbusier and other pioneers of the modern movement, which began as a reaction against

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styles and an attempt to go beyond them. Yet modernism is being roundly discredited today as a sterile and inhibiting *style*, mainly because many of its architects adopted forms without an understanding of how and why they worked in the past and how, why and where they might be suitable in modern times.

But Carver brings to his subject far more than a pedagogical intent. He has a real love for his subject, as is obvious from his photographs. And lacking deep affection, how could he have written as follows about the small southern town of Olvera? "It is uncommonly beautiful, whether when first seen from many miles away gleaming on its hilltop in the midst of great rolling plains of olive groves, or more closely, with its houses rippling

Village of Casares in southern Iberia

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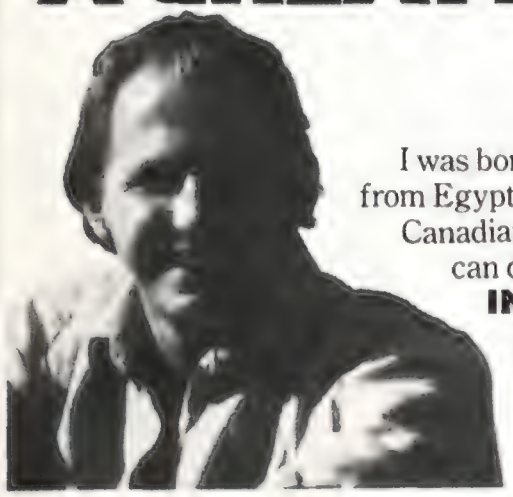

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down between the rocks like a giant glacier issuing from the cathedral."

He ends on a sad but tentatively hopeful note. Of the last two photographs in the book, one shows village rooftops covered by a forest of TV antennas; in the other, smoke from industry all but covers a small town and edges toward the castle overlooking it. Yet, in the last line of *Iberian Villages,* Carver writes: "After the desecration of the coast, to visit these brilliant towns is a reminder that man at one time was capable of making an environment of great beauty, sympathetic to nature and himself—and that he may still do so again."

Andrea O. Dean
Senior editor, American Institute of Architects

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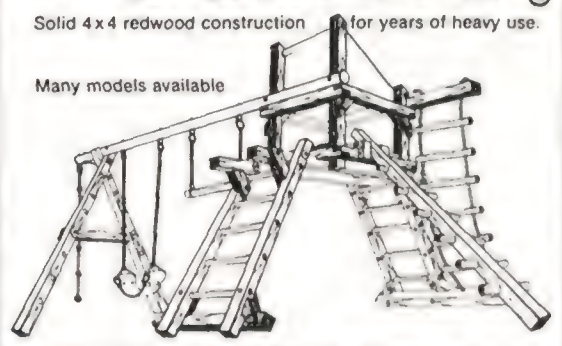

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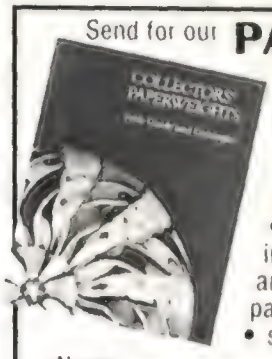

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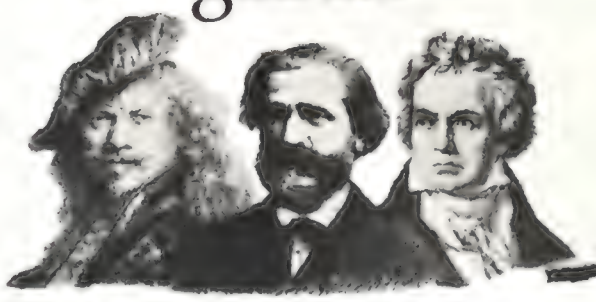

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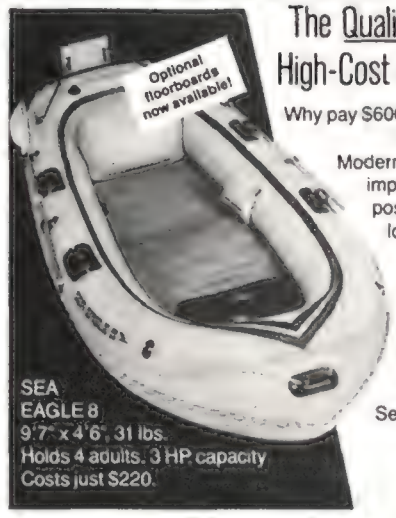

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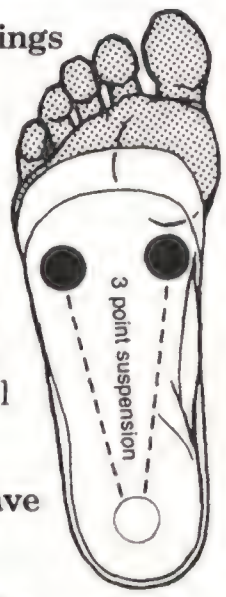

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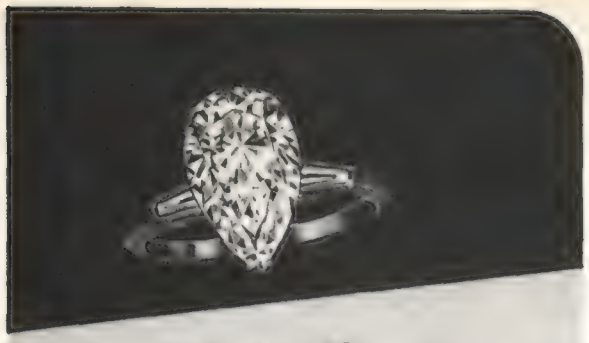

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Smithsonian highlights

Look for brightly colored tents on the Mall at the end of June, filled with food, crafts and people representing places on opposite sides of the globe—Oklahoma and Korea. The annual Festival of American Folklife, sponsored by the Smithsonian and the National Park Service, will set up shop this year at 12th Street and Madison Drive, the site of the original festival 16 years ago. Events will run June 24-28 and July 1-5, from 11 A.M.-5:30 P.M., plus a few evening concerts.

The Oklahomans, celebrating 75 years of statehood, will dish up their authentic barbecue along with the facts about a favorite industry—oil. The Korean-American program will focus on traditional song and dance and marks the 100th anniversary of U.S.-Korean diplomatic relations. Ethnic food will be sold.

Special for children will be a chance to rope "cows" made of hay bales, to ride "bucking barrels," make kites, try Korean writing and learn new games. As always, the festival is free.

Special June exhibits and events

National Air and Space Museum

Solar Challenger (June 4 through August) Exhibit of the aircraft which made the first solar-powered, Paris-to-London flight in 1981.

Amelia Earhart: Flight into Yesterday (June 18) Free all-day symposium (see "Mall," p. 20).

Launching a New Space Age (June 19, 8 P.M.) Lecture by astronaut Sally Ride.

Moons of Other Worlds (June 5, 9 A.M.) Monthly sky lecture, spacearium.

Hirshhorn Museum & Sculpture Garden

De Stijl, 1917-1931: Visions of Utopia (through June 27) Major show on an influential Dutch movement.

Samuel Murray (through July 18) Sculptures by a turn-of-the-century realist.

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At the Portrait Gallery: Daguerreotype of orator-statesman Daniel Webster

National Museum of African Art
Thinking with Animals: Images and Perceptions (through July 1) A reminder of Man's dependence on the animal world.
The Stranger Among Us (through July 1) Traditional works depict Europeans and others in Africa since 15th century.

National Portrait Gallery
Daniel Webster: The Godlike Black Dan (June 4-November 28) Memorabilia of this eloquent statesman (above).
FDR: The Early Years (through July 25).

Renwick Gallery
The Grand Renwick Souvenir Show (June 11-October 11) Objects by American craftsmen relating to the museum and its architect, James Renwick.
Posters for a Picnic (through September 19) Posters announcing the annual company picnics of Herman Miller, Inc., Zeeland, Michigan, since 1970; includes close-ups of corn, teeth and cherry pie.

National Museum of American Art
Berenice Abbott: The '20s and the '30s (June 4-August 29) The photographer's work from her Paris and New York years.
Elihu Vedder's Drawings for "The Rubáiyát of Omar Khayyám" (through October 5) Some 50 illustrations from a volume of the verses published in 1884.
Recent Acquisitions: 20th Century (ends September 6) Paintings and sculptures.
Awards in the Visual Arts I (through August 8) Works by ten "emerging" artists (SMITHSONIAN, May 1982).
Prints and Multiples: 79th Exhibition by Artists of Chicago and Vicinity (ends August 22) Woodcuts, etchings, lithographs.

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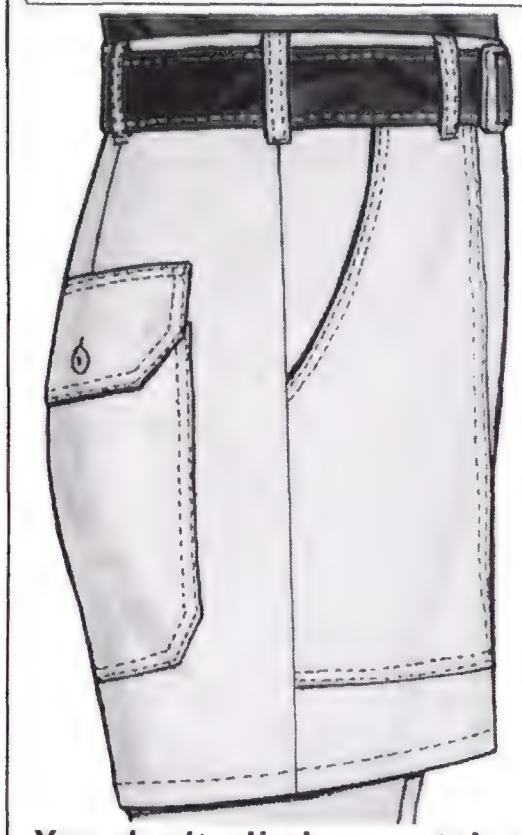

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National Museum of Natural History
Inua: Spirit World of the Bering Sea (June 18-January 2) Eskimo society as it was (SMITHSONIAN, May 1982); lecture, June 25, noon.
Zoological Works by Sigrid Bruche (June 19-August 15) Oil paintings of animals.
Contemporary North American Indian Art (through September 12).
Village of No River (June 18, noon) Premier of film on small Eskimo village.
Easter Island (June 4, noon) Lecture.

Cooper-Hewitt Museum (New York)
Button, Button (June 22-August 22) Some 500 ornamental buttons of wood, bone, metals, glass, rubber, porcelain.
The Column: Structure and Ornament (June 8-August 22) Styles and uses.
Basketry Tradition in New Form (June 8-August 22) Variations by nine artists.
The American Landscape (ends July 18).
The Jacquard Loom: Recent Experiments (through August 22) Fabrics.

National Museum of American History
American Glass (June 1-December 1) Donations by manufacturers, circa 1900.
Clockmaking and Science in America: William Bond & Son in Boston New exhibit shows precision instruments.

Freer Gallery of Art
Chinese Paintings: Recent Accessions (through June 30) Thirty works (above).
Luminous Shadows A Chinese album leaf and ceramics.

Smithsonian events
For price information and tickets to Resident Associate events, call 357-3030:
Many Happy Returns (June 12, Polo Field, 1:30 P.M.) Annual boomerang competition, featuring displays by American and Australian champions; lecture, film and workshops, June 5.
The Ephemeral is Eternal (June 25, 26, 27; seven performances) American premier of Michel Seuphor's 1926 Dada play.
Ice Age Art (June 23, 8 P.M.) Lecture.

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Birds of the Indian Monsoon (June 28, 8 P.M.) Wildlife film, with introduction by S. Dillon Ripley.
Eskimo Art and the Spirit (June 19) All-day seminar.

For information and tickets to Division of Performing Arts events, call 357-1500:
Max Roach on Drums (June 4, 8 P.M.).
Jazz Films (June 5, 3 P.M.) Free films.
Old and New Dreams (June 5, 8 P.M.) Dewey Redman on sax plus colleagues from Ornette Coleman's ensemble.
Solo Jazz Piano (June 6, 3 P.M.) Hank Jones, Jaki Byard, John Lewis.
Sam Rivers (June 6, 8 P.M.) Tenor and jazz saxophonist with his ensemble.

Membership benefits

A pre-visit packet for Associates planning a Washington visit is free; send postcard request or phone Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-357-2700 or, for hearing impaired, TDD 202-357-1729). Allow two weeks for receipt.

Through Labor Day, the National Air and Space Museum is open 10 A.M.-9 P.M. daily; most other Smithsonian museums are open 10 A.M.-5:30 P.M. The special welcome for visiting members at the Associates Reception Center in the castle, 10 A.M. to 4 P.M. daily, includes a briefing on benefits—a slide-lecture orientation to the 13 Smithsonian museums; dining at the members' restaurant, The Court; relaxing in the Associates Lounge; and discount privileges.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write to SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some June exhibits:
Loveland, Colorado (May 29-June 27) *Edison and the Electrical Age: 100 Years,* Loveland Museum and Art Gallery.
Cambridge, Indiana (June 5-July 4) *America's Architectural Heritage,* Huddleston Farmhouse Inn Museum.
Shreveport (June 5-July 4) *John Sloan in Santa Fe,* Meadows Museum.
Grand Rapids, Michigan (June 5-August 22) *America's Architectural Heritage,* Grand Rapids Public Museum.
Cincinnati (June 12-July 11) *Children's Art from the People's Republic of China,* Cincinnati Riverfront Stadium.
Dallas (June 12-July 11) *Aquaculture: A World View of Sea Farming,* Museum of Natural History.
Wausau, Wisconsin (June 12-July 24) *Collages: Selection from the HM&SG,* Leigh Yawkey Woodson Art Museum.

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Colorado Rockies August 1-7: Study astronomy, geology, botany and zoology at an environmental center near Pike's Peak.

Salmon River August 5-12: See bears, bighorn sheep and spectacular scenery while rafting in Idaho's wilderness.

Isle Royale August 20-28: Hike through the remote and pristine wilderness of this Lake Superior island.

Colorado Mining and Railroad History August 21-29: Trace the colorful Gold Rush Era from Denver to Durango.

Massachusetts Heritage August 21-30: Architecture, antiques, music and beautiful countryside from Boston to the Berkshires.

Canyon and Mesa Archaeology September 10-21: Enjoy autumn at Mesa Verde, Chaco Canyon and the Hopi reservation.

Pacific Northwest September 17-26: Visit Mt. Rainier, Olympic Peninsula, San Juan Islands and British Columbia.

Washington, D.C.: Power and Style September 21-26: See varied aspects of the capital, from the halls of Congress to private homes.

The Tetons October 4-12: Glowing with autumn colors, the magnificent peaks in this national park provide a backdrop for natural-history study.

Philadelphia October 6-10: Celebrate the city's 300th anniversary with this special in-depth tour.

North Carolina October 6-14: Enjoy local hospitality in the historic homes of Old Salem, New Bern and Edenton.

Great Smoky Mountains October 7-14: Camp, hike and learn about the pioneer history of North Carolina.

Chesapeake Birds October 8-16: From Chincoteague, Virginia, to Cape May, New Jersey, observe vast flocks of migratory birds.

Asheville October 14-18: Biltmore and historic homes—plus the World's Fair at Knoxville, Tennessee.

Sapelo Island November 7-13: Camp on unspoiled beaches while studying the ecology and history of this Georgia barrier island.

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Oxford/Smithsonian Seminar 10-25: Iron Age Archaeology and British Literature are among in-depth courses taught by Oxford faculty. Stay in Worcester College with visits to Cambridge, Bath and Stratford for a performance.

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Egypt and the Nile October 5-22: Visit Cairo, then cruise aboard chartered riverboat to explore spectacular sites.

Performing Arts of China and Japan October 16-November 7: The exotic sounds and color of Oriental drama; performances, theater schools and backstage visits.

Seminar in Salzburg October 23-November 7: Stay in an opulent palace; study Baroque Era or opera history. Museums, theater and concerts.

Kyoto Seminar November 5-21: Live Japanese style; visit shrines and gardens of Kyoto and Nara; study Japanese history.

The Ancient World of Peru November 5-21: Visit Lima, Cuzco, Indian markets and amazing Machu Picchu.

New Zealand November 19-December 3: In-depth tour with talks on natural history, the Maori heritage, parliament and a home visit.

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Aircraft Restoration: How To October 3-7: The master craftsmen of the National Air and Space Museum share their many techniques in workshops at the Paul E. Garber Facility (formerly Silver Hill).

American Antique Furniture October 3-8: Connoisseurship of masterpieces, 1650-1840. Includes great collections, detection of fakes, care of antiques and tours of the Winterthur Museum and the elegant Diplomatic Rooms at the Department of State.

Tibet: Lost Horizons October 17-22: The culture, history and art of this rich civilization, along with behind-the-scenes tours of the Freer Gallery and the best private Tibetan art collection in the United States.

China: A Cultural History October 24-29: From prehistory to the enigmas of today, with emphasis on intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the outstanding collection of the Freer Gallery of Art.

Princes and Patriots: Flemish and Dutch Painting in the 17th Century November 14-19: Lectures and tours of the masterpieces of Rembrandt, Hals, Vermeer, Rubens, Van Dyck and other artists in the National Gallery of Art with art historian Bill Kloss.

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Sam J. Sebastiani

Sebastiani VINEYARDS

"A Family Winery in the Sonoma Valley"

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By Lillian Stewart Carl

It was 'gorilla warfare' to some students

I've served my time—three years trying to teach American History 101 at a community college—and now I'm quitting to stay home and write fiction. What forced my hand was the fiction some of my students tried to pass off as the answers to my essay questions.

Not *all* the kids (there still are a lot of literate ones around) but enough of them. Their exams were full of misspellings, misapprehensions, malapropisms and sheer ignorance, no matter how many times I had outlined the relevant points.

And yet the process of grading tests often would bring me a smile: at times the students' mistakes had a certain delightfully weird logic to them. One student assured me, for example, that the Whiskey Rebellion took place when Carry Nation attacked the local saloons with her tomahawk. Another said that *Uncle Tom's Cabin* was about the first slave to have his own place on the plantation.

"Tripes" of Indians—25 million of them —walked over from North Central Asia, someone else wrote, but this number declined because of the long trek. Another said that when the Europeans gave guns to the Indians, they proceeded to kill each other off and thus saved the Europeans the trouble. After all, the English colonists' attitude toward the Indians was "move or die"—at least that's what I had told my class. One student, however, wrote that the Indians were expected to "get with it or die."

And the Europeans brought Christianity to the Americas; they set up missions, I was told, to "Christize" the Indians. I also learned that the missionaries believed in the Trinity, and that the Indians converted because they thought they were getting a "three-for-one deal."

Then there are the students who panic in the face of an exam. One wrote that the Proclamation of 1763 prohibited the colonists from settling west of the Himalayas; another said that the colonists were angered by the Proclamation because they couldn't get to all the oil discovered west of the Appalachians (John D. Rockefeller, where were you when we needed you?).

The students were especially intent on simplification. One assured me that the English sent convicts to the American colonies; if you could not afford the trip yourself, you could go steal a loaf of bread and get to the New World free, along with other "petite criminals such as thiefes and prositutes and tax invaders."

Some students became disoriented whenever they had to express themselves in writing. One thought that the Monroe Doctrine "was the way that we kept the forgein countrys from colonying the western hemonsfere"; that Manifest Destiny concerned "the Atalca to the Pacific"; that the Missouri Compromise concerned "the 36/30 parrell"; and that in the South "the plaintions had ecomic problems." Spelling does seem to be a lost art.

The Indians, I learned, had "premature" (read primitive) war methods before the Europeans came. I grew to expect students to say that Pennsylvania was founded by the "Quackers"; I always had a vision of Donald or Daffy Duck waddling the narrow streets of Philadelphia.

And when someone wrote "gorilla" for "guerrilla" during our study of the Revolution, I wondered just what that person thought I had been talking about. King Kong swinging from the Liberty Tree?

One student said that the Revolution inspired such works as Thomas Paine's *Common Science*. Another wrote that the Americans were divided into patriots and "tourists," not Tories.

One of my favorite misspellings was of "militia"; someone once spelled it "malicia," and went on to describe how the American malicia "squirmished" with British regulars at Lexington and Concord. And after my telling the students that New Jersey was the "cockpit" of the American Revolution, one of them volunteered that New Jersey was the "crackpot" of the war.

The Wilmot Proviso came out "Wilmont" so frequently on exams that I'm starting to think of it that way myself. And I wonder what the person was thinking who changed Santa Anna, the President of Mexico, into "De Santa" (I was tempted to ask where "de elves" were).

While such misspellings and misinterpretations are often humorous, I do wonder how a teacher can hope to instill some knowledge of American history and the English language into students who evidently could not care less. Do you suppose a five-minute song-and-dance version of the Constitution could be inserted between *Dukes of Hazzard* and *Dallas*? Or maybe a spelling bee?

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